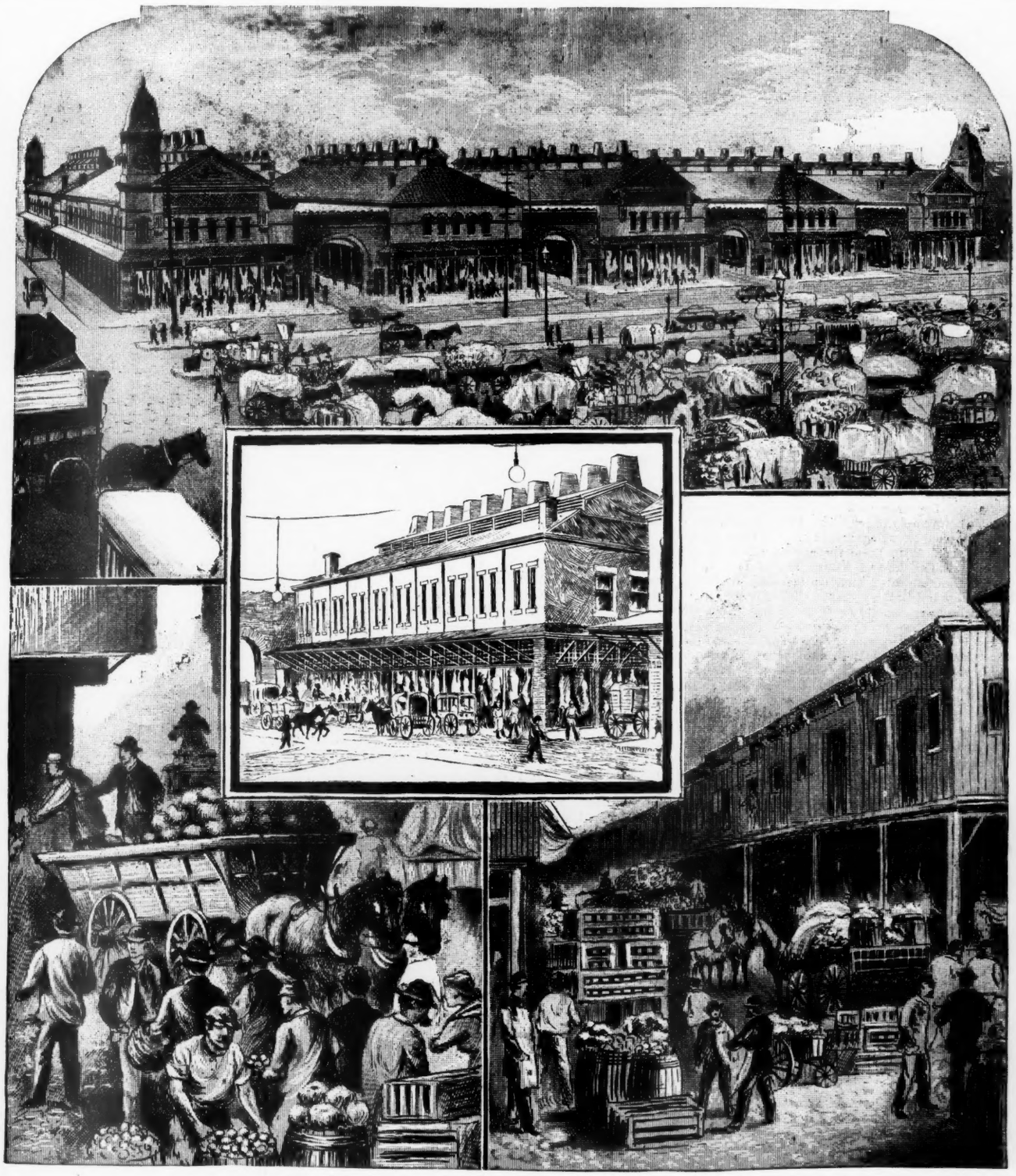
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XLVIII.—No. 3. NEW YORK, MARCH, 1889. NEW SERIES—No. 506.



THE GREAT METROPOLITAN MARKET.—*See Page* 107.

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ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

March.

Up rose the wild old winter king
And shook his beard of snow;
"I hear the first young harebell ring.
'Tis time for me to go!

"Northward o'er the icy rocks,
Northward o'er the sea,
My daughter comes with sunny locks;
This land's too warm for me!"

CHARLES G. LELAND.

FARM ÷ AND ÷ GARDEN ÷ WORK
MARCH, 1889.

If the work for February was varied because of the uncertainty of the weather, not the less so is the work in March. The severest winter ever experienced began with March, and it was many weeks before all the land could be plowed. The old fashioned New Englanders divided up the seasons better. With them the second of February marked the middle of winter, and if that date found their store of hay, corn fodder or other provender but half expended, they felt sure they would have enough to carry them through until the pastures were green once more.

Public Spirit Among Farmers.—Fortunate is that farming community in which there is a village improvement society, a farmers' club or a grange. Some such organization should exist in every farm neighborhood, and there should be enough public spirited men to sustain it. There would be fewer farmers sued for using bogus patents if it was known that the farmer had such a body of men to stand behind him.

Road Making, if managed by some such association as we have mentioned, would be vastly better done than by the road master, who rarely satisfies any one, but is said always to have good roads in front of his own property. In early spring the character of the work which has been done on the roads will manifest itself. The places where washouts might have been anticipated, by making side drains, will now be seen, and the work done.

Farm Help is to be hired this month. Look to the morals of the men. No employer, where there are children on the farm, wants a man, however good a workman he may be, if he uses profane or vulgar language, or is rough or cruel to animals. Such a man will spoil a yoke of oxen or a span of well trained horses in a single season. The profane or violent man is often the quicker workman, but the slow and decent man will prove the cheaper in the end.

Drains.—Look to the outlet of drains that may get obstructed by ice or snow. Surface drains made to carry the water from grain fields often get obstructed by leaves, etc., and need cleaning out.

Meadows.—Use the roller upon those places which have been uplifted by the frost. Remove sunken stones that the roller will not push out of the way of the mower. Digging a hole and burying them is often the readiest way of getting rid of large stones.

Wheat and other autumn sown grain will often give a sufficiently increased yield to pay for a top dressing of some quick-acting fertilizer. If clover is to be sown upon grain, try to sow it on the last fall of snow.

Live Stock Notes.

Horses require generous feeding and good care this month if they are to be kept in good heart to enter upon the spring work, which will soon begin. They should never be left to stand unblanketed when exposed to the cutting, boisterous winds. When driving in the rain a light rubber blanket will more than pay for itself in saving of horses and harness.

Cows which are expected to come in soon should have plenty of fodder, bran, roots and such food, but none of a heating character. They should not be allowed to run on icy places, as a slip may produce serious consequences.

Young cattle which have been wintered at the straw stack are quite apt to be lousy. This should be seen to, and proper measures used to clean out the parasites. Applications of lard and kerosene oil will do very well.

Stock of all kinds should be kept off the meadows and grass lands while they are soft and spongy. The damage done by the hoofs in cutting up the turf is many times more than any possible value of the withered foggage they can pick up.

Poultry, if given half a chance, can be made to pay during this month by the production of eggs. Cleanliness, variety of food, dusting boxes, gravel and lime in some form, are essential.

Kitchen and Market Garden,

Though but little can be done in the open ground as a general thing, this month, our skilled market gardeners find this one of their busiest seasons. They are occupied in preparation for the pressure of work soon to come. Some of the methods followed in the market gardens may be adopted in the private or family garden with advantage.

Cold Frames.—The earliest cabbages, cauliflower and lettuce sent from their gardens to the town markets, are from cold-frame plants. The seeds were sown in September in the open ground; when of the right size these plants are pricked out into a cold frame, where they are kept as dormant as possible through the winter. In a mild spell, the frames must be ventilated by a complete removal of the sashes, and they must be more or less ventilated except in very severe weather, all through the winter. The plants are transplanted from the frames to the open ground either this month or next. The plants are prepared and hardened for this change by giving them proper exposure. To properly winter cold-frame plants requires frequent attention, more than will be profitable in the garden of the farmer, or other private garden unless a gardener is employed. Those who wish for early crops by the use of cold-frame plants can purchase them at the seed store. Nearly as early crops of cabbages, etc., may be had by saving the plants from seeds sown in a hot-bed, and carefully hardened off. The hot-bed requires such frequent attention—a neglect of half an hour may be fatal to its contents—that the few early plants required in the family garden can be most readily produced in

The Kitchen Window Box.—Of course any other window will answer as well for what might be termed the "Farmer's Hot-bed," but the kitchen is more constantly warm, and there is quite sure to be some one present to give any care that may be required. The boxes should be of the length to fit the window, about a foot wide and four inches in depth. They should be filled to within an inch of the top with good soil; probably some soil was prepared, and placed where it would not freeze, for use in a hot-bed; otherwise it may require some ingenuity to procure the needed soil. Besides the box for sowing the seeds there will be needed at least one other into which to transplant the seedlings. In sowing the seeds the early cabbages, cauliflower and lettuce will be best for the first sowing; tomatoes and other very tender plants may be sown six weeks before it is safe to set them in the open ground. In sowing seeds it is well to take some trouble to drop them an inch apart; at transplanting, each alternate plant is taken up; this will leave those remaining in the soil-bed at the right distances. Of course the plants (and the soil before the plants appear) must have the needed watering, and if the sun is so hot at midday as to cause the plants to wilt, shade by the use of a screen of paper or of muslin. When the weather will allow give plants an airing by raising the window sash, but a strong draught should be avoided; and, whenever the weather makes it safe to do so, the boxes may be placed outside. When the plants are large enough to handle, transplant them to the box prepared for the purpose, setting them two inches apart. If this does not remove enough from the seed rows to leave the plants two inches apart, thin them out sufficiently to leave the remaining ones at that distance.

Orchard and Fruit Garden.

In most locations the work will be of that preparatory kind mentioned for last month.

New Orchards.—If trees are still to be ordered, do it at once, but not in such haste that proper thought cannot be given to the selection of varieties. If one is near an early market, early apples are profitable, but as a rule they are not suitable for distant transportation as they are too tender.

Pears.—The Bartlett is the general favorite and may be planted for the market. Unless he makes a specialty of this fruit, it is not worth while for the farmer to plant many varieties of pears.

Quinces.—The Apple and the Orange are old and favorite sorts, but some of the new varieties described by the AMERICAN AGRICULTURIST within the past two or three years will, on account of their great size, become popular market fruits.

Small Fruits.—It will not pay the farmer to undertake strawberries, currants and other small fruits except under two conditions: First, that he has a good and easily reached market; manufacturing villages are usually excellent markets for berries of all kinds. The second consideration is that there can be obtained a suitable number of pickers. It is an easy matter to raise a crop of small fruit, but unless it can be picked at just the right time it is a dead loss.

Grapes are by some classed as small fruits, and we wish that on every farm there were an ample supply for the family. Where there is a fence or a side of a barn or other building there is room for a grapevine.

Spring Frosts.—Peach orchardists find this a critical time, as an unusually severe frost when the buds are well developed brings destruction to the crop in whole or part. We have called to our peach growers' attention the method of the European vineyardists in keeping off the frosts by making a smoke in their vineyards. Preparations are made beforehand—materials for a fire and damp straw or other litter with which to make a smudge. Frosts do not come long before daylight and the watchers give timely warning that the protecting cloud of smoke may be spread. If any of the American peach growers have tried this method, we hope they will report the results.

Injured Trees.—If young trees, in spite of all the protection that has been given them through the winter have been barked by rabbits or mice, repair the damages as soon as discovered. Where the injury is slight a mere earthing-up with a mound of soil that will not dry out will often suffice. If the wound is very extended, a new tree is the best remedy. If trees are still to be planted, order them at once, and when they are received, heel them in, covering their roots with soil in a trench from which they may be planted at leisure.

Flower Garden and Lawn.

The above title is intended to include whatever area is given up to pleasure-ground or ornamentation. A lawn is any surface of grass intended solely for ornament, whether a broad area or the small grass plat of the front yard. If new lawns are to be made the work should be done in early spring. If the area is small, and good turf readily procured, it is far better to lay sods. Good turf may often be found on a closely grazed pasture, by the roadside or in waste places. If the turf is not firm enough to roll up for removal, it is not compact enough to lay. In turfing an area, the soil should be well prepared beforehand. Manure the soil, and if there are any soft places, make them firm. In laying the sods, use a large knife for cutting the edges, to make neat work, and use a pounder to beat down the turf, so that its roots will be in close contact with the soil. If needed, water thoroughly after the turf is laid. In laying the sods, remove all other than grass-roots. On all larger lawns the margin, where they border on rows, paths or beds, should have these bordered by a good, tough sod. Blue grass may be sown alone, but the "Lawn Mixtures," sold by reliable seedsmen, give a better and permanent lawn. The success of a lawn depends upon having an early and compact growth of roots, and this is secured by having a heavily manured and thoroughly worked soil, and as the growth of grass requires it, keeping it low by frequent use of the mower.

THE NEW METROPOLITAN MARKET.

The new West Washington Market which was opened for business at the beginning of this year is a place in which the farmer is not less interested than the city resident. It is situated on the western extremity of that portion of New York which was once the suburban village of Greenwich. The open space now used as a wagon market was once occupied by Fort Gansevoort. A little over ten years ago this space, bounded on the north by Little Twelfth street, and south by Gansevoort street, was set apart for a wagon market. It is a broad, paved plaza, intersected by flagged sidewalks, and will accommodate four hundred wagons. The new West Washington Market, shown in the upper part of our engraving, faces on West street. It was built last year to accommodate the trade which had overgrown the capacity of the West Washington Market between Barclay and Fulton streets. It consists of ten brick buildings, each 183 by 50 feet. These contain 420 stalls, the holders of which were selected out of about 2,800 applicants. The buildings are separated by avenues each twenty feet wide, entered from West street through the arches which connect the fronts of the buildings. One of those avenues is shown in the central part of our illustration. The entire structure was erected by the city, at a cost of one million dollars, exclusive of the fittings, which each stall-holder furnishes at his own expense. The market and surroundings are brilliantly illuminated by electric lights. The open market is occupied by the wagons of farmers and market gardeners, who pay a fee of twenty-five cents each per day. They sell their vegetables, fruit and other produce directly from the wagons at wholesale to grocers and dealers. The stalls of the market buildings are devoted to the sale of meats, fish, poultry, dairy products, etc. Extensive as are the accommodations of the new market, the volume of trade is so great as to overflow it. All the streets leading to it are crowded with wagons and lined with produce commission houses. Some of these stores are veritable relics of old Greenwich village, like the row shown in the lower right hand corner of the illustration. The scene here is very animated every morning, but the excitement culminates on Friday nights and Saturday mornings. The thronged pavements, the rush of buyers and carriers, and the shouts of venders, make up a scene which has no counterpart on our continent.

MATING PURE POULTRY.

MISS H. M. WILLIAMS, NEW JERSEY.

Every poultryman should own a Standard of Excellence, that he may become familiar with the different breeds. If Leghorns are preferred the breeder should understand all the peculiarities of the breed. He must make high fences and be prepared for frozen combs in winter unless the fowls are warmly housed. They are persistent little layers of rather large white eggs, and for eggs exclusively give great satisfaction. If Light Brahmas are chosen, low roosts and fences are in order. This breed has been in favor for many years and is destined to hold its own for many a day. Too much care cannot be given in mating to bring about the desired results. The Standard requires the middle toe heavily feathered; beak yellow, with a dark stripe down the upper mandible in the rooster—it is not always found in the hen. The comb should be pea shaped, rather higher in the center than at the front; ear lobes and wattles rather large and of some bright color. The wattles should be as near the same length of the ear lobes as possible. If a preponderance of pullets is desired, old hens should be mated with a cockerel. Take each hen in your hand, turn back the feathers of the body, and if you find the under color to be quite white, also the upper net of the secondaries mossy, make a note of it. We will suppose that seven or eight hens at the most have been selected. A cockerel so dark in under color as to be bluish slate, coal black tail and sickles, with lesser coverts slightly edged with white, black cape, dark wing butts, nearly black flights, should be mated with these hens. If white feathers show in the tail of cockerels, the second year, they are useless for breeding purposes. So it will be seen what an important matter plumage is. If cockerels are desired a pen should be made up of cockerels and pullets, after a study of the requirements of the Standard. But you say, "I am not breeding for the show room." If you have pure stock why not mate it intelligently? It costs no more to feed a thoroughbred than a mongrel, and certainly the high price paid for pure-bred roosters is an incentive. I am amused when parties write to me to send a good Brahma rooster. What is a good rooster? How can we know unless the plumage of the birds with which he is to be mated is described? I have seen a show pen of Brahmas which could not be excelled, and their offspring made almost useless, from the fact that dark hens and roosters had been mated, making the chicks a muddy, smutty black. These rules hold good in all the breeds, and if the matter of mating is carefully considered it is a pleasure to the eye and a profit as well. I find that feeding bran and ground meat in a perfectly dry state is excellent for Brahmas that are disposed to excessive fat.

CULTIVATION OF OATS.

JOSEPH HARRIS.

Oats are so easily grown, adapt themselves to such a great variety of soils, and require so little labor in preparing the land, sowing and harvesting, that they receive very little care and thought. If we have a piece of land we do not know what else to do with, we sow it to oats. If we get a crop, well; if not the cost of seed and labor is little and the land can be sown to wheat in the fall. It was on this principle that, last spring, we adopted the plan which Col. F. D. Curtis and others said they had practiced with success—sowing oats on the snow early in spring as we do clover seed, and take the chance of the melting snow and rains washing them deep enough into the soft soil to cover them sufficiently to insure their sprouting. Owing to the unusually dry spring the plan in our case was not a success. There is a limit to the amount of neglect and rough treatment which even oats will stand. The oats so sown were on one side of the public road. On the other side we had a piece of seven and one-fourth acres, which was gang-plowed and harrowed and drilled in with two hundred pounds of superphosphate and two hundred pounds of nitrate of soda per acre. The gang plow takes three furrows at once. We put on three horses and plowed about five inches deep. The ganging, harrowing, drilling and fertilizers and the rolling would cost about as follows:

Gang plowing per acre	$ 1.00
Harrowing three times	.50
Drilling	.50
Rolling after the oats are up	.20
200 pounds of superphosphate	2.80
200 pounds of nitrate of soda	6.00
Total	$11.00

The difference in the cost of treatment of the two fields is eleven dollars per acre.

The oats that were sown broadcast on the snow came up thin and we cut them with a mower and made them into hay. If allowed to ripen they would probably have yielded fifteen bushels per acre. On the other piece the oats came up well and grew right along from the start. They smothered every weed except a few small patches of Canada thistles, and the land was left in admirable condition to sow to wheat in September.

There was a high, sandy, stony knoll, about half an acre, on which the oats, though good, were not as heavy as on the rest of the field. Yet we got from the seven and one-fourth acres 610 bushels of splendid oats, thrashers' measure, or eighty-four bushels per acre. Near the sandy knoll there is a low swale which formerly was too wet to plow. It is now underdrained and the oats were heavier there than on any other part of the field. They stood up perfectly and we have no doubt that the yield on this old swale must have been over one hundred bushels per acre.

But when we talk about "bushels," the weight per bushel should be taken into consideration. These oats after being run hastily through a fanning mill weighed forty pounds per measured bushel. We do not know the exact weight of the bushel as the oats came from the thrashing machine. In some experiments on oats last year at the New York Experiment Station, the heaviest oats of any of the fifteen differently manured plats after careful cleaning was thirty-two and one-half pounds per measured bushel, and the lightest twenty-seven pounds, the average weight being about twenty-eight pounds per bushel. The legal weight of a bushel of oats in this State is thirty-two pounds, of barley forty-eight pounds, and of wheat sixty pounds. A crop of sixty bushels per acre of wheat, which once in a life-time is obtained, is equal in weight to one hundred and twelve and one-half bushels of oats.

After we get the reports of the different crops for which the AMERICAN AGRICULTURIST has offered prizes, we shall be able to form some idea as to the limit of production. That there is a limit, cannot be doubted. What that limit is, we do not now know.

WHY IS THE YIELD OF OATS SO LOW?

1. Weeds. 2. Wet, undrained land. 3. Starvation or want of plant-food. 4. Poor tilth and late sowing. 1. If land is capable of producing weeds it is evident that it contains plant-food enough to produce oats. Weeds and useful plants contain precisely

the same elements. The weeds, however, are the better fighters, and the oats, without the help of man, stand no chance at all. No matter how much manure you apply, if the weeds get the start they will starve out the oats. 2. Wet land, if underdrained, often makes the very best and most profitable and productive land on the farm. 3. Starvation is easily prevented. It is merely a question of making or buying manure or fertilizers. As to the economy or profit and loss, that is another question. It depends largely on the price of the product. As a rule, it may be said that when the soil contains sufficient nitrogen, superphosphate can be used with great profit on oats and other crops; but when it is necessary to buy nitrogen we must get a good price for the crop or the application of nitrogen, though it will greatly increase the yield, will not pay. 4. In regard to poor tilth and late sowing it would seem as if we had the matter in our own hands. But this is not always the case. In fact, a very large proportion of our land is so wet in the spring for want of underdraining that it is not in fit condition to plow until it is too late to sow oats with any reasonable expectation of getting a large yield. The remedy is underdraining and fall plowing.

HOW TO GROW A LARGE CROP OF OATS.

One of our neighbors thinks of competing for the AMERICAN AGRICULTURIST prize of $500 for the largest yield of oats per acre. He has a piece of sandy loam near the barn that has had for years more than its proper proportion of manure. It was in potatoes last year. He thinks of putting on a ton of hill and drill phosphate per acre. He will sow it broadcast very early in the spring, and as soon as the land is dry enough to work, plow it in about five inches deep, and harrow until the land is in fine condition; then drill in one and one-half bushels of oats per acre and afterward sow broadcast on the surface one and one-half bushels more, and harrow and roll until they are slightly covered. His idea is that the shallow covered oats will start earlier than those drilled in deeper, and that the roots will occupy different layers of soil. This seems somewhat fanciful; but the object of offering these prizes is to bring out every known method of increasing the yield.

Were we going to compete, we should adopt the following methods: We have a thirty-acre field that we intend to sow to oats this spring. It has been in grass and clover three years. It was plowed with a three-horse plow last spring, and planted to corn and potatoes without manure of any kind. It was well cultivated, and the land is clean, and as you walk over it you can (or could last fall when we were husking corn) feel the land give way and spring back at every step, showing that the sod keeps it loose and porous underneath. In the ordinary course, this land, the first moment it is dry enough in the spring, will be plowed about five inches deep with a gang-plow and three horses and harrowed and drilled in with oats just as fast as it is plowed. If this is not done, a heavy rain on the plowed land might delay sowing for several days. In fact, we have known it delayed two weeks. Sow two and one-half bushels of oats by measure per acre, being careful to blow and sift out all the small and light kernels. As our oats weigh forty pounds per bushel, this would be one hundred pounds per acre, or a little over three legal bushels. We never sow less than this, and frequently sow more. The English and Scotch farmers sow four to five bushels per acre, and before drills were used six bushels per acre were sown broadcast.

At the New York Experiment Station (Sixth Annual Report, Page 65) large kernels of oats proved to be better every way than small ones, and when planted at different depths ranging from one-fourth of an inch to seven inches, one and one-half inches deep gave the best results, though deeper sowing proved far better than shallower. The experiment seems to prove that we must frequently lose a great many oats when sown broadcast, especially when dry weather ensues.

WHAT FERTILIZERS TO USE.

On the field we are talking about we shall drill in with the oats two hundred pounds of superphosphate and two hundred pounds of nitrate of soda per acre. In a favorable season, we should expect an average of from sixty to seventy bushels per acre. The two hundred pounds of nitrate of soda furnish thirty-two pounds of nitrogen. As nitrate of soda (owing to the death of 100,000 laborers in the nitrate district of South America by cholera last year) is scarce and high and not easily obtained, it will be more convenient for most farmers to buy a nitrogenous superphosphate, selecting one that contains a high percentage of nitrogen. If it contains four per cent, we shall have to use eight hundred pounds to get the thirty-two pounds of nitrogen contained in the four hundred pounds of superphosphate and nitrate that we propose to use ourselves.

In Lawes and Gilbert's experiments on oats, they sowed in connection with superphosphate, potash, soda, magnesia, etc., five hundred and fifty pounds of nitrate of soda per acre, or on some plats salts of ammonia containing the same amount of nitrogen per acre. In some years the salts of ammonia proved to be better than the nitrate while in 1873 the results were as follows:

1.	No manure	10¾	bushels of oats per acre	
2.	Superphosphate, potash, etc.	17	"	"
3.	Same as No. 2 and ammonia salts	48¼	"	"
4.	Same as No. 2 and nitrate of soda	63⅝	"	"

If we were going to contend for the prize, we would sow half a ton of some good complete fertilizer like Mapes potato manure, or Stockbridge corn or potato manure, or Bowker's "hill and drill"; they are all unquestionably good and the oats will not know that they are intended for corn and potatoes. Sow this over the whole field. Then, in different parts of the field, on not less than an acre each, sow in addition different quantities of nitrate of soda or sulphate of ammonia, alone or mixed, say on one acre two hundred pounds per acre, on another three hundred pounds, on another four hundred pounds, and on another five hundred pounds per acre. The latter quantity may, and probably will, be too much, but if we have a dry (and yet not too dry) season the probability is that we should have as big a crop of oats as the land, the moisture in the soil, the season and plenty of available plant food are capable of producing. Man can do no more.

We have said that the chances are that five hundred pounds of nitrate or sulphate of ammonia (one hundred pounds of sulphate of ammonia is equal to about one hundred and twenty-five of nitrate of soda) would be too much. In a moist growing season there would be too much straw and the crop would "lodge." To guard against this danger it is quite common to sow two hundred pounds of common salt per acre in connection with nitrate, as the salt is supposed to "stiffen the straw." There are at any rate many instances on record where the salt had a very marked and beneficent effect.

We have suggested, however, sowing four hundred pounds of nitrate instead of five hundred pounds, so that if the latter is more than the season will stand, we shall have an acre that will not lodge, or if the four hundred pounds are too much we have an acre with three hundred pounds. It will be strange if in this great country of ours there is not found some section where the season is capable of standing such heavy manuring as three hundred pounds of nitrate and half a ton of complete fertilizer. Nevertheless, we have suggested the use of only two hundred pounds on one acre.

After the manures are sown and the seed is in, there is nothing more to be done. The idea of sowing nitrate and other fertilizers every few weeks to feed the plants as they grow is, we believe, based on a misconception. But try it if you think otherwise. If the oats are drilled in, we would far rather take a narrow hoe and whenever a thistle or mustard plant or weed of any kind showed itself, cut it off. "But will it pay?" If you get the prize it will "pay big," and if the competition is sharp it will not take many weeds to beat you.

One of the heaviest crops of oats we ever saw was grown before superphosphate and other chemical fertilizers were used, and when we depended on sod, plowing under green crops, manure and lime for enriching our land. The field had been covered with water for many years. The dam was taken down, a deep ditch cut through the field and drain tiles laid where necessary. One hundred and fifty bushels of lime per acre was applied, and the field sown to oats. Previous to this it had been in grass and rushes for several years. It shows that large crops can be grown without the use of modern fertilizers. We shall expect to hear big things from some of the rich, alluvial bottom lands of the East, West, North or South. But that is no reason why those who believe in chemical fertilizers, or good old-fashioned barn-yard manure, should not try hard for the prize, and win it if they can.

Effects of Training.—An interesting instance of the results of training was recently given in my dairy. The home-bred cows are all reared without ever having sucked their dams and are hand-fed from birth. There has never been any difficulty in teaching the calves of these cows to drink the milk. One lesson, giving the finger to guide the young thing to the milk in the pail, and then gradually taking it away, has always been sufficient. The calf of a cow purchased some time ago, and now weaning, has shown an extraordinary obstinacy and stupidity in refusing to drink, and nearly two weeks' time has been occupied in teaching it. This cow when a calf sucked its dam for a month and her calves up to this have always sucked. The habit is thus inbred. HENRY STEWART.

PROFESSOR W. O. ATWATER.

Professor Wilbur Olin Atwater, recently appointed to an important position in the United States Department of Agriculture, was born May 3, 1844, at Johnsburgh, Warren Co., N. Y., and was the son of a farmer. He was graduated at Wesleyan University, Middletown, Ct., in the class of 1865. In the same year he was appointed principal of the academy at Colchester, Vt. In 1866 he became principal of the high school at Spencer, Mass., and in the following year held the same position in the high school at Westport, N. Y. He spent the next two years in post-graduate study at the Sheffield Scientific School of Yale College, New Haven, Ct., from which, in 1869, he received the degree of Doctor of Philosophy

WILBUR OLIN ATWATER.

During the next two years he traveled in Europe and studied chemistry and allied branches of science in the Universities of Leipsic and Berlin and in experiment stations in Germany and elsewhere. He made agricultural chemistry a specialty, and in 1871 he was chosen professor of general and agricultural chemistry in the East Tennessee University, Knoxville. He resigned this position in 1873 to become professor of chemistry in the Maine State College at Orono, whence, after only one term, he was called to be instructor in chemistry at Wesleyan University. In the following year he was elected professor of chemistry in the same institution, which office he still holds.

Soon after going to Middletown, Ct., Professor Atwater delivered a lecture on commercial fertilizers before the Connecticut State Board of Agriculture, and made a deep impression by his enthusiastic presentation of the need of experiment stations. The effort to establish an experiment station in Connecticut first took tangible shape at a farmers' convention held at Meriden, in December, 1873, where a committee was appointed to bring the matter before the Legislature and the citizens of the State. In 1874 the Legislature made an appropriation of $2,800 per annum for two years to Wesleyan University for experimental work; the college gave the free use of its laboratory, and $1,000 were contributed by Orange Judd to forward the enterprise. Professor Atwater was appointed Director of the station. At the end of the two years the Legislature made provision for the permanent establishment of the station, which was located at New Haven. Professor Atwater was appointed a member of the Board of Control of the station and has performed the duties of this office ever since. In 1882-3 he spent considerable time in Europe, mostly in Germany, working in biological chemistry in Munich, Heidelberg and elsewhere. When the Storrs School Agricultural Experiment Station was established at Middletown, Ct., in 1888, Professor Atwater was made its Director.

Professor Atwater contributed to the AMERICAN AGRICULTURIST during the years 1875-1881 a series of nearly seventy articles on Agricultural Chemistry, under the title of "Science Applied to Farming," in which some of the important principles of fertilizing and feeding now currently adopted and understood were for the first time explained in detail in the English language. He also instituted, as Director of the Connecticut Agricultural Experiment Station, and later, in connection with the AMERICAN AGRICULTURIST, a series of co-operative Field Experiments with fertilizers which were carried

out by several hundred farmers, experiment stations and colleges in all the States east, and some west of the Mississippi and several Provinces of Canada. These were continued through a series of years, and a number are still in operation with colleges and stations. It has been the most extensive co-operative enterprise in agricultural experimenting ever undertaken in this country or Europe.

The publications made by Professor Atwater setting forth the results of his experiments in determining the chemical composition of fish, the relation of nitrogen to the nourishment of plants, the composition of foods, etc., attracted attention both in this country and Europe. His work in connection with experiment stations brought him into intimate relations with workers in this line, and his articles on food in the *Century Magazine* gained him a wide reputation as a man able to bring the results of scientific investigation home to the attention and comprehension of the general public. Since the passage of the Hatch Act, by Congress, giving to each of the States and Territories $15,000 annually for the support of experiment stations, it has been found desirable to establish at Washington an office for the co-ordination of the work of these stations in order that the greatest scientific enterprise in behalf of agriculture in which this or any other government has ever engaged might be productive of the largest results. Professor Atwater was deemed by those most interested in this enterprise to be the man best fitted to be at the head of this office, and he was therefore appointed to the position by the Commissioner of Agriculture. Professor Atwater had himself made no effort to secure it.

Professor Atwater has of recent years made a specialty of Biological Chemistry, the chemistry of animal and vegetable life, which is of itself a large science. His work upon the composition of the flesh of fish, and investigations upon other foods have taken a considerable part of his time and thought. In his laboratory at the Wesleyan University a larger number of analyses of fish has been made than in any other laboratory in this country or in Europe. But his work has not been confined to this field. Among other problems in which he has been interested is the source of the nitrogen in plants. He was the first to bring positive experimental evidence of the acquisition of large quantities of atmospheric nitrogen by plants. These experiments have been lately confirmed by French and German investigators. While fully appreciating the practical side of applied science, Professor Atwater's specialty, it will be seen, has been in original research in what may be termed high science.

The list of the publications made by Professor Atwater during the past eighteen years includes over one hundred and fifty titles. The articles in the American Chemical Journal, Reports of the United States Fish Commission, *Annales de Chemie et de Physique*, *Comptes Rendus* of the French Academy of Sciences, *Zeitschrift für Biologie*, *Berichte der Deutschen Chemischen Gesellschaft*, and *Landwirthschaftliche Jahrbücher* have the most scientific interest. Those in the AMERICAN AGRICULTURIST and the *Century Magazine* are doubtless better known to the general public than any other. Among the most important of the scientific articles may be mentioned the first Annual Report of the Connecticut Agricultural Experiment Station, 1876; On the acquisition of Atmospheric Nitrogen by Plants, American Chemical Journal, Vol. 6; Food Consumption, Quantities, Costs, and Nutrients of Food-Materials in the Seventeenth Annual Report of the Massachusetts Bureau of Statistics of Labor; On the Loss of Nitrogen by Plants during Germination and Growth, American Chemical Journal, Vol. 8; Contributions from the Chemical Laboratory of Wesleyan University, 1887; in the *Zeitschrift für Biologie, Ueber die Ausnutzung des Fischfleisches im Darmkanale im Vergleich mit der des Rindfleisches.*

As might be expected Professor Atwater has made a pet of his library, of which he is very proud, and justly, since it is probably the largest private library of its kind in the country. And those who would find the Professor at his best should seek him among his books and apparatus. They will be surprised to find so young a man, and pleased and benefited by contact with one so affable, so enthusiastic and so inspiring.

Sowing of Seeds.—Wherever the soil is in proper condition to work, and crumbles before the plow, or when stirred by the spade or fork, a large share of the hardy seeds may be sown. The larger share of seeds are sown in rows twelve to fifteen inches apart, and it is well to have a marker that will make furrows at these distances. Nearly all of the root crops, parsnips, early beets, carrots, onions, both seeds and sets, leeks, carrots, etc., also radishes in cold frames and in the open ground, are best sown in this way.

SUB-IRRIGATION IN FLORIDA.

SHERMAN ADAMS, FLORIDA.

In many parts of Florida, the necessity of intensive culture is rapidly being recognized. The result will be to make this a land of gardens rather than of broad fields; to make the people the producers of the general necessaries of life rather than the shippers of a few articles and the importers of a large amount of their provisions as at present. Fertile and thoroughly tilled gardens, yielding immense returns, will then be the rule rather than the exception. Then the regular spring and autumn droughts will cease to be general causes of failure, and the few frosts of December and January will not be serious obstacles to success.

Present developments indicate that a potent factor in culture will be found in sub-irrigation. Trenches are dug three or four feet wide and twenty-two inches deep, with cement bottom, filled with shell, rock or strips of wood through which the water can percolate, and covered by grass, brush, etc., into the earth to the trench. By this means a constant supply of moisture is secured for the growing vegetation; the trenches are from nine to fifteen feet from center to center, and the cost is from $500 to $1,000 per acre. They also serve as drains in case of excessive moisture.

Another mode of sub-irrigation and drainage is by nailing together three rough boards, in the form of a triangular box, which is placed about twenty inches under ground. The theory is that the leakage is sufficient to keep the soil constantly moist, the water being drawn to the surface by capillary attraction. The supply is kept up from a flowing well, stream or pump. Others intend to use perforated pipes for the distribution. As there is a possibility that the pipes would fill with sand, it is proposed to surround them with a few inches of muck to act as an absorbent and prevent the water from taking a direct course downward, as is so common with Florida soil, it having very little absorbent power. On the coast splendid results have been secured by digging drains in the marshes along the rivers, thus elevating the land to a sufficient height above the water. On tide water, dykes are built and closed at high tide, but opened at low tide to allow the surplus water to run off. In one case on the peninsula, four miles north of Daytona, some six acres of marsh have been ditched, the soil from the ditches raising the level of the ground; a dyke has been built along the Halifax river (east shore) and a windmill and steam-engine pump out the water. The land was heavily limed and, as it was too soft to be plowed by horses or mules, the plowing was done by a single ox last summer. By another year it will doubtless be firm enough for ordinary teams. Other persons near there have also made successful experiments. In fact, the marsh mud is shown by analysis to contain almost as much plant food as ordinary stable manure. It is successfully used to fertilize the pine lands near by. The primary requisites for growing plants seem to be plenty of fertility in the soil, and an abundant supply of moisture.

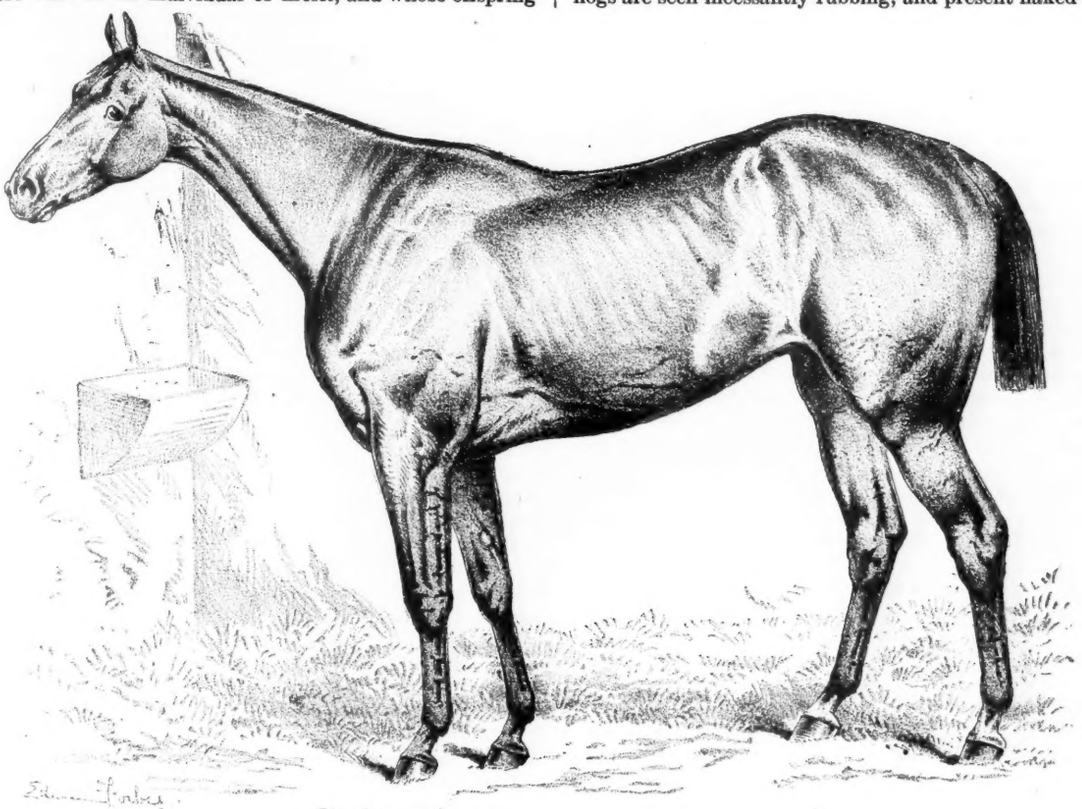
Pruning Fruit Trees.—We occasionally meet with persons who think that trees, in order to bear properly, should be pruned every spring. Similar persons think they cannot start the year aright without a dose of spring physic of some kind. The trees may need pruning, but, at this season or at any other, one rule should be observed. No branches, large or small, should ever be cut away without a reason for it. One should be able to say to himself, why will it be better for the tree to remove a certain branch than to let it remain? If this rule were observed there would be much less pruning than at present. We are not of those who object to all pruning because it is unnatural: such should remember that all cultivation is unnatural. When we place a tree by itself and prevent other trees and other vegetation from encroaching upon it and checking its growth, we depart from nature. The first step in cultivation is to relieve the tree or other plants from the need of struggling with others for a place in which to grow and spread their above-ground portions as well as to develop their root system in its search for food. In nature there is this constant "struggle for existence." Whatever manner we aid a plant in this struggle is 'agin' natur'." One who wishes to cultivate his trees, intelligently, be there but a few or a large orchard, should have a work in which the principles as well as the mechanical operations of tree culture are set forth. Such a work as this is "The Fruit Garden," by P. Barry. Its title may mislead, but it includes all that one needs to know about fruit tree culture, the raising of the plants from the beginning to their planting and treatment in the orchard, and gives the reason for every step. It is the most thorough treatise of its kind and is a library of itself.

THE THOROUGHBRED SIRE, LUKE BLACKBURN.

Luke Blackburn, whose portrait is given herewith, is a bay horse of compact build. His action was easy and regular as clockwork, his bearing stylish and his temper faultless. He was a good starter and a better finisher. Verily, he seemed a judge of pace. When he swung into the home he knew by instinct how dangerous were his antagonists. He watched those in his rear as closely as those in front, and as he neared the goal every line in his graceful form stood out marked in its proper place, and in the final rush the "game little bay" showed, time and again, a clean swift pair of heels to many a good field of race horses. Luke Blackburn is a son of imported Bonnie Scotland, from Nevada, a daughter of Lexington from Lightsome. Than this there can be no better blood. Bonnie Scotland was a good son of that grand brood mare Queen Mary, both of whom appeared in portraits published in the AMERICAN AGRICULTURIST in November, 1887. Thus a son of Luke Blackburn, even though not known to fame, ought to be a more useful sire than any cold blooded horse in whose pedigree, if known, there was not an individual of merit, and whose offspring never would be better than himself. The courage that fights out a sharp contest on the turf will pull a wheel through a slough; endurance that carries a heavy weight at racing pace will bring the man and horse safe home through hours of fatiguing exertion. Then the good temper and general docility of disposition born of a noble lineage are of untold value in the roadster and indispensable in the saddle horse, whether needed as a toy in the park or a stanch ally in the hunting field. The use of steam and electricity as motive powers will surely even if slowly drive horses out of many paths now trodden by them. Street car horses will not be required. This is plain to the perception of the dullest. Saddle exercise is rapidly growing in favor. Therefore we encourage our readers to get ready to supply a need, though a recent one, rather than to hold on to a sinking ship.

Luke Blackburn's career as a two-year-old was far from being successful, as out of thirteen starts he won but twice. He was second on six occasions, and third once, being unplaced four times. Still his methods were such as to attract the attention of the Messrs. Dwyer, of Brooklyn, who paid $2,500 for him. As a three-year-old his performance was brilliant. He met the best horses and defeated them; even Harold, own brother to Iroquois, lowered his colors to the great son of Bonnie Scotland and Nevada. On Sept. 30th, 1880, he won the great American stallion stakes, in which struggle he injured the quarter of one forefoot and did not appear in public again until the following year when, as a four-year-old, he started twice and won once. The injury mentioned caused his retirement from the turf.

Luke Blackburn was bred by Messrs. J. and A. C. Franklin, Summer Co., Tenn., was foaled in 1887, and is now at Belle Mead stud, near Nashville, Tenn. Already the fame of our hero has been renewed in his son, Proctor Knott, who, last summer, at the Sheepshead Bay race course won the inaugural race for the "Futurity," which was run over the new track and was not alone a great struggle but also a rich prize. Besides the winner of the "Futurity," Luke Blackburn is credited with other good and promising youngsters.



THE THOROUGHBRED STALLION LUKE BLACKBURN.

Lice on Swine.—A common annoyance is lousy hogs, and it is sometimes a difficult thing to get rid of, particularly in large herds. It is well known to most people what prolific and rapid breeders lice of all kinds are, and the hog-louse is no exception. When any hogs are seen incessantly rubbing, and present naked spots in their coats, lice are suspected as the cause, and examination generally shows it to be so. The breeder himself, or those who have the care of such animals, may well use caution in leaning against the pens or sheds in the hog lot. The hog-louse is a prodigious insect, the largest of the whole family. They are sometimes fully three-sixteenths of an inch in length. Their sucking apparatus must be powerful to penetrate the tough skin of the hog. Coal-oil with a few drops of carbolic acid added is, however, a sovereign remedy. Not only must the hog be treated, but the bed and surroundings also. A want that I have felt with other hog-breeders, and which it is hoped some instrument maker will supply, is that of a good hog syringe. It should be of the piston pattern, to hold at least twelve ounces, with one nozzle eight inches in length and not over three-eighths of an inch in diameter, and a spray nozzle throwing eight to a dozen streams each the size of a large pin. With such a syringe, using the spray nozzle, it would be easy to fight lice. It would also be useful in sun-scald and all skin troubles. In the absence of something of this kind one can employ a spouted oil can, using enough of the coal-oil to cover a strip along the back eight or ten inches wide from the ears to the root of the tail, and in three or four days a second application, having in the meantime used it freely in the beds and around the sheds. A favorable time to use it

is when the hogs are eating, but the animals must all be treated, and it is best to do it all at once. Some have used coal-oil and lard in equal parts, coating the whole animal, but I have not found this necessary, and have seen no bad results from the free use of coal-oil and carbolic acid. DR. A. G. CHASE, Kansas.

CULTIVATION OF HORSERADISH.

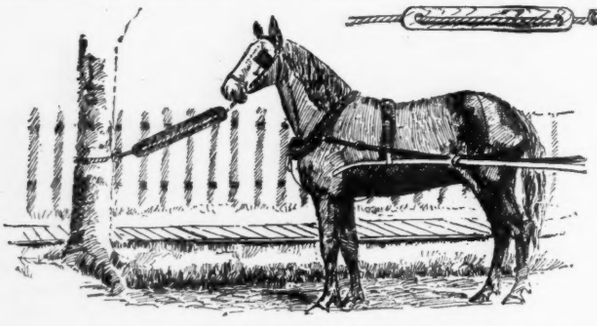
There is a largely increasing consumption of horseradish, which is now found regularly on the tables of all hotels and restaurants, as well as of most private families. It is also exported in large quantities, and is prepared for the retail market by bottlers who make a special business of it. They require smooth, large roots, free from knobs, and for such the present price is $100 to $120 per ton. The rough, inferior qualities sell at any price they will bring, being bought by street venders who grate them by hand.

The best soil for this crop is a sandy loam or reclaimed bog which has been thoroughly cultivated for several years and is free from stones and roots. Plow it thoroughly. Plow as deeply as possible, then make trenches three or four feet apart, running the plow backward and forward, throwing the soil out each way and making the trench eighteen or twenty inches deep. Bolting a piece of hard wood plank on the inside of the mold board, letting it extend back about two feet, greatly facilitates throwing the soil back. When the trench is completed fill it three or four inches deep with well-rotted stable manure and tread it down. Cover the manure with soil from half an inch to one inch deep; then drop the cuttings in a straight line three inches apart along the trenches. For cuttings, any pieces or trimmings about the size of a lead pencil or larger will do; they may be of any length, from one to four inches. Then run a plow on the ridge thrown out of the trench, turning the soil in the trench so as to cover the cuttings with about four inches of soil. When they have sent up sprouts which begin to show, run the plow on the opposite side of the ridge, throwing in about four inches more and so continue until the trenches are filled up, and in their places are ridges eight inches high.

To gather the crop plow away the soil from one side of each row so as to pull the roots out easily. Then trim off all small fibers or roots; also cut the tops close to the ground. The roots must then be thoroughly washed and laid in a shady place to dry, when they will be ready for shipping. If they are to be kept for winter use, put them in long heaps and cover them with soil to keep them from freezing. S. BARKER, New Jersey.

A PROTECTIVE HITCHING-STRAP.

Many horses while standing tied in the street or elsewhere show an irrepressible desire to gnaw the post, rail, tree or other object to which they may be hitched. Whether for amusement, or from hunger or playfulness, the horse which has this habit will practice it on every wooden object, as the hitching-posts, bars, and in too many instances the street shade-trees of almost every village bear



SECURE HITCHING STRAP.

silent testimony. Our illustration shows a device from F. B. Swezey, Howard Co., Md., for an attachment to the ordinary tie-rein, which keeps the horse at a safe distance, and effectually protects the tree or other object from his teeth. It consists of a piece of hard wood board, two feet long and as many inches wide, with a hole an inch from each end through which the tie-rein is thrust. Such a stick is quickly made and may be carried along in the buggy or wagon and always be ready for use.

Seeding with Oats.—Oats are beyond question the best crop to seed grass and clover with. It is not so much the crop as the condition of the soil and the time that favors the successful growth of grass; oats secure the very best time, and if that crop is properly prepared for, it affords all the necessary conditions of soil. If farmers would always sow their grass and clover seed upon well manured soil, fresh plowed and well harrowed, we should hear no more of poor catches and half sown meadows, and if farmers would only give their oat crop a liberal quantity of manure, which it will repay with good interest, they can always get a good catch of grass and clover on the land.

A DURABLE AND CONVENIENT GATE.

The illustrations herewith, from drawings by W. A. Walters, Mercer Co., Mo., show the general appearance and details of a gate which can never sag, get off its hinges, or be opened by cows or

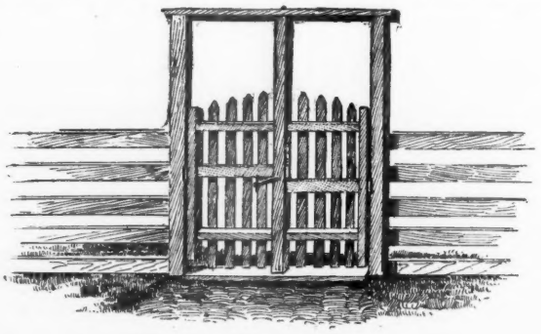


FIG. 1. THE GATE COMPLETE.

other farm stock. The frame, Fig. 1, has two upright posts, each four by six inches and seven to eight feet high above ground, across the top of which is a cross-piece, six inches wide, nine and a half feet long and four inches thick in the middle, and beveled to one inch at each side. A sill two inches thick, and eight feet long is sunk level with the surface of the ground. The gate is eight feet wide, hung by the central upright piece, into either end of which an iron pin one inch in diameter is driven, holes having been first bored for that purpose. The fastenings consist of two bolts, each four feet two inches long, resting in mortises cut in the central post and outer vertical pieces, as shown in Fig. 2. The outer end of each bar is beveled and fits in a slot cut in the gate post. The other ends of the bars are held in place by steel springs screwed to the side of the central post. These springs allow them to fly back when the gate is closing and hold them in the notches when it is shut. These are unfastened by a round handle, to which they are attached by strings, as shown in Fig. 3. As will be seen, this is in effect a double gate or turn-stile, opening from either side, turning upon the central pivot, and doubly fastening automatically when closed. If a single gate is desired it may be constructed upon the same plan, only leaving off one side.

FIG. 2. FASTENING IN PLACE.

Red Cedar for Ornamental Purposes.—Some thirty years ago six trees of the red cedar, *Juniperus Virginiana*, were planted in my lawn. They were small shrubs when planted and have now attained a height of thirty feet, and a trunk circumference of forty inches at the ground. The soil is the rich loam of the Illinois prairie. Although usually growing in dry, rocky places, these trees have certainly made a good growth; all are yet vigorous. They have received no pruning worthy of the name, yet their contour is graceful—regularly formed cones, sixteen to nineteen feet basal diameter. The branches are horizontal and start out almost from the ground. The foliage is a deep green; but if there is a very severe drought and the trees are given no water, the foliage will assume a semi-dun color, to be replaced by the old-time green within three days after the first considerable rainfall. Three of the trees produce perfect flowers, and the bluish berries sprinkled with white powder enhance the appearance of the trees. The trees have received no damage from the severest winters, except that some branches have broken under the weight of snow and sleet. The branches are very

FIG. 3. FASTENING.

close, and I have noticed that while the birds build in them, the cats do not care to penetrate to the nests, and my songsters are undisturbed—no mean point to me, as I like both birds and cats. This tree, I confess, is not so beautiful as some other evergreens and some might not think it particularly attractive; yet it possesses enough good qualities to entitle it to no little consideration as an ornamental tree, and I can especially recommend it to those who, like myself, live on a Western prairie.

J. M. S., Illinois.

COMBINED ICE-HOUSE AND FARM CREAMERY.

The illustrations herewith are the perspective view and plan of a farm ice-house, flanked on one side by a wind-mill tower and tank, and on the other by a small creamery. It was designed by Sheldon F. Smith, York Co., Pa. The ice-house is built of field bowlders, laid in cement mortar to the ground line, and common lime mortar above. The walls are twelve inches thick and eight feet high to the belt molding, above which are two feet of board walls covered with vertical shingles. The tower is twelve by sixteen feet at the base, tapering to three by four feet at the summit, which is twenty-four feet above the ground. A wind-mill of any approved pattern surmounts the tower, with a rod which connects with a pump at the base. The creamery is fourteen by sixteen feet, with a piazza of the same size in front. The former is clap-boarded to the belt, and shingled above. Fig. 2 is the ground plan. The tank, B, which occupies the second story of the tower, is eight feet in diameter at the base and six feet high. Its actual capacity is 1,883 gallons. The ice-house, C, is furred up inside with studding, three by four inches, two feet apart, to which is nailed a lining of matched boards. The creamery, D, is thirteen and a half by fifteen feet inside. At II are creamers, which are supplied with water through pipes leading from the tank through the ice-house, by means of which the water is cooled. At G is a churn, which may be worked by power in the annex E or, if by hand, the annex may be omitted. At H is a butter molder, and J is the veranda. A structure like this will not only afford every convenience for the care of milk and making butter, but furnish an ample supply of ice and water for general purposes. It should, if practicable, be set on ground so high that pipes leading from the tank will convey water to all parts of the dwelling house.

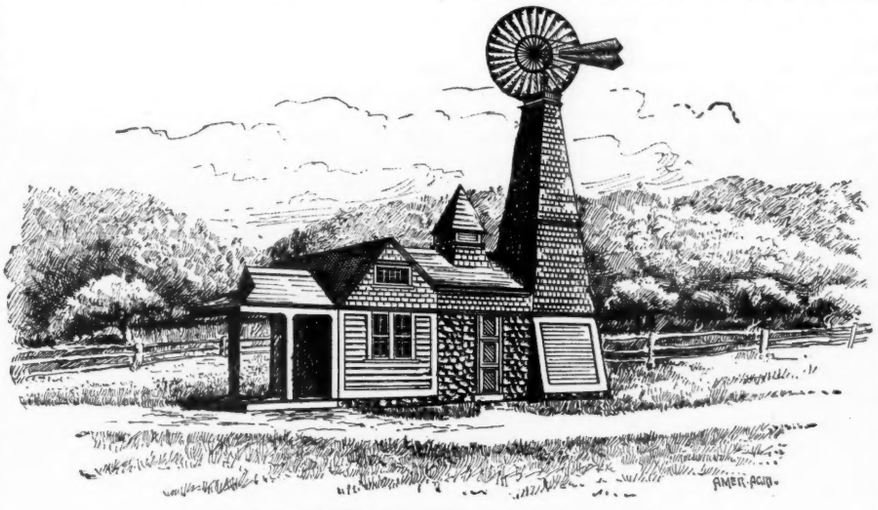


FIG. 1. PERSPECTIVE VIEW OF FARM CREAMERY.

MEASLES IN SWINE.

DR. A. G. CHASE, KANSAS.

While not a skin disease, yet in its development measles affects the skin secondarily. This complaint as a hog disease has not attracted the attention it deserves. I called public attention to it some seventeen or eighteen years ago, and then urged a more careful examination of meats when there was any reason to suspect this trouble. It is entirely different in its pathology from the rubeola or measles of children, and the name is calculated to mislead. The measles of the hog is neither contagious nor infectious, but is caused by entozoa or parasites that in some manner find lodgment in the cellular tissues immediately under the skin, and there is good ground for supposing that this is the embryo tape-worm (one of them) that infests the human body and gets into our system by eating pork raw or insufficiently cooked. Joseph Harris was formerly of the opinion that inbreeding might be one of the causes, in which I differed with him; but it is enough to know that the entozoa are sometimes present in considerable numbers. They probably get into the hog by eating raw meat or animals, or the fecal discharges of animals infested with them, such as rats, mice, rabbits, etc., and this Mr. Harris thought was their chief source. In this disease the fat next the skin has a mottled appearance, a purplish hue, with well-defined margins of color, which color often extends to the skin itself. It does not seem to give the animal as much trouble as one would be led to expect, although there is a feverish condition of the system. The only remedy that offers any hope of removing these parasites is oil of turpentine in somewhat large doses and continued for a length of time. It would be difficult for any but an expert to diagnose this disease during life. The microscope alone could decide it, but a careful external examination might afford good grounds for suspicion. To a full-grown hog I would give half an ounce of oil of turpentine on alternate days for two, or better still, three weeks. It can usually be given with meal and sour milk. The turpentine is readily and quickly absorbed by the system, and permeates every tissue. To this fact alone are we indebted for relief in several complaints. If the turpentine does not physic the hog, I would advise giving one-fourth pint of castor-oil every third day. If there are any parent worms in the intestinal canal, this course is pretty sure to give them a "boost" that will be satisfactory to the breeder at least.

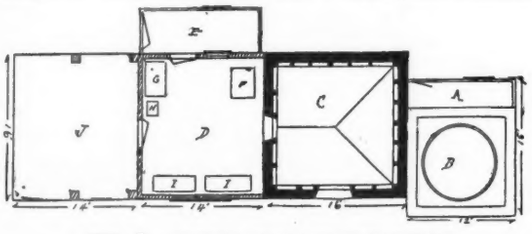
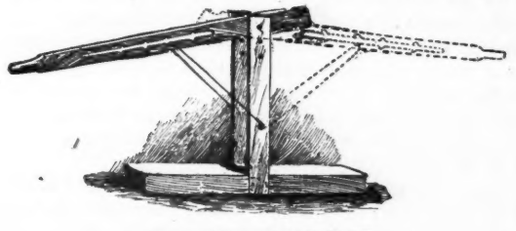


FIG. 2. GROUND PLAN OF CREAMERY.

A REVERSIBLE WAGON JACK.

Probably no implement in common use on the farm has called out more inventive ingenuity, or assumed a greater variety of forms, than the wagon-jack. The one illustrated herewith was designed by E. A. Harrison, Ontario, Canada. The base is a scantling, four inches wide, three inches thick, and two feet long. The two upright pieces are of hard wood boards an inch thick, four inches wide, and two feet high. The lower ends are let into the base and firmly nailed or screwed to it. Near the top are three half-inch holes in each, for the bolt to support the lever. The lever is of hard wood an inch and a quarter thick, four feet long and five inches wide at one end, tapering to a handle at the other. A long slot is cut through its center with notches on either side. At the large end of the lever is a round notch on either side, for the hub of the wheel to rest in. A half-inch bolt supports the lever, the holes in the upright bars allowing it to be shifted up or down for wheels of different sizes. An iron rod, four feet long, is bent through the slot in the lever, and each end is fastened by an eye to a bolt through the standards, seven inches from the base. As will be seen by the dotted lines the lever may be reversed when desired.



CONVENIENT WAGON-JACK.

CLEANLINESS IN THE DAIRY.

HENRY STEWART.

When cows are stabled all night and the greater part of the day, it becomes a matter of concern how they should be littered so as to secure the most perfect cleanliness. Swamp muck dried is the best of all absorbents, but it is objectionable as litter because the dust penetrates the cow's coat, and however well she is brushed it will be falling into the milk pail at times. Sawdust will absorb the moisture very well, but it is not valuable as manure, while swamp muck is. Consequently I use both of these in the stable. Plenty of dried muck (or peat) is spread in the gutter and in the manure cellar, and hard wood sawdust is spread under the cows. By a proper arrangement of the floor, the stall and the ties, and the gutter, the cows may be kept clean, with very little currying. The gutter should be half filled with the dry peat so that no liquid remains for the cows to draggle their tails in, and two or three inches of sawdust should be spread on the floor. Hard wood sawdust is better for the soil than pine, which decays very slowly.

Thorough carding and brushing are indispensable for cleanliness. The waste of the skin, the scale or dandruff which peels off, and all loose hairs are taken off, and the dried perspiration which has a disagreeable odor, and is really an excrement, is removed. The friction is exceedingly beneficial to the animals, stimulating the skin, encouraging the perspiration and removing from the blood those used up waste matters which are offensive, and would, if not thus got rid of, escape with the milk. This is the cause of what has been called the animal odor of the cows and the milk, and which has been truly charged with exercising an injurious effect upon the milk as a decomposing ferment. But the true odor of a clean, healthy cow is not disagreeable, much less fetid. Virgil wrote of the sweet breath of the heifers, and any dairyman may experience the same if he will take pains to enable the skin to throw off the waste matters which will naturally pass off when the cows are free to clean themselves by rubbing their skins, and in other ways.

Exposure to foul air is uncleanliness. The stables should not only be well cleaned and purified by plenty of fresh litter and plaster, which neutralizes the odor of a stable, but also by ample ventilation with abundant space for each cow. A cow needs eighty square feet of floor space and nine feet above the floor for a sufficient supply of fresh air; that is, four feet of the floor of a stable twenty feet wide and nine feet high; so that wide passages in front and rear of the stalls are needed for health as well as convenience. Good health is one of the elements of cleanliness, for disease of any kind is always productive of fetor of breath, or exhalation, or excrement, which being caused by a wrong internal condition will certainly affect the milk.

Clean food is another element of cleanliness, and pure water is included. Perhaps there is no other place except a chemist's laboratory where greater attention must be given to secure perfect cleanliness and entire absence from all interfering matter than in a dairy, including the stable as a most important part of it.

CRATES AND PACKAGES FOR COUNTRY PRODUCE.

Great trouble and vexation would be saved to the salesmen who handle country produce on commission in New York if shippers and produce raisers, throughout the country, would use uniform sizes of crates and boxes. The crates should be made to hold full, rounded heaping measures—one bushel, half a bushel and one barrel. The bushel is a standard measure established by law, and the barrel has been for fifty years in general use as a standard measure for potatoes, onions, etc. The barrel used for this purpose is of the size known as a flat-hooped flour barrel and has a capacity of two and a half heaping bushels. By adapting and making all packages of uniform capacities throughout the country, the buyers will be better satisfied, as they will know what they are paying for, and what quantity they can measure out in selling. Uniform measures will also prevent a great deal of fraud which is now perpetrated on the public by dishonest dealers.

The crates now used in shipping from Florida and the South are of the following sizes: For a half bushel crate, two end and one middle piece, each four inches wide, fourteen inches long, and three-quarters of an inch thick; slats, one foot ten inches long, one-quarter of an inch thick, from one and a half to three inches wide. The width of the slats will be governed by the purpose for which the crate is used, leaving narrow or wide spaces for ventilation. For a bushel crate, there are two end and one middle piece each eight inches wide, fourteen inches long, and three-quarters of an inch thick; slats twenty-two inches long, from two to three inches wide, and one-quarter of an inch thick. Cabbage crates have two end and one middle piece each twelve inches wide, twenty inches long and three-quarters of an inch thick; slats thirty-eight inches long, three-eighths of an inch thick, and three inches wide. The above crates are the standard crate as adopted by the growers and shippers of Florida; but do not conform to any measure used in the New York market. The above half bushel and bushel crates will not hold a heaping or rounded bushel, and as fruits and vegetables are sold by heaping measure and hold a trifle more than a struck bushel, the crates are very unsatisfactory to buyer and retail dealer. The cabbage crate is all right, as it makes no difference how many it holds, but in using the same size for potatoes or onions, or any vegetable sold by the barrel, it is very unsatisfactory.

We give the following sizes for crates holding rounded or heaping measure: For half a bushel: Two end and one middle piece each five inches wide, fourteen inches long, and three-quarters of an inch thick; slats twenty-two and one-half inches long, one-quarter of an inch thick, from one to three inches wide, according to the size of the articles it is to contain and the size of openings for ventilation. For bushel crates: Two end and one middle piece each ten inches wide, fourteen inches long, and three-quarters of an inch thick; slats to be twenty-two and one-half inches long, two to three inches wide and a quarter of an inch thick For a barrel crate: Two end and one middle piece each twelve inches wide, twenty inches long, three-quarters of an inch thick; slats thirty-one inches long, two and one-half to three inches wide and one-quarter to three-eighths of an inch thick.

EVERGREEN HEDGES—PLANTING AND AFTER MANAGEMENT.

W. D. BOYNTON, WISCONSIN.

Evergreens, like most other trees, will thrive best in a well-worked and fairly fertile soil. The common belief that the evergreens like a poor soil is erroneous. It must be admitted that they are usually found occupying such soils in a wild state, and that they thrive fairly well in such situations, but their growth is slow, and in raising evergreens I have observed that we have the best success on naturally strong fertile soils where sand predominates. I have observed, too, that they respond readily to fine tilth and cultivation. Therefore I would give the hedge row a well-rotted, deeply-worked and finely pulverized soil. As it is usually set where the surface soil was previously occupied by sod, due attention should be given to the preparation of the site. Where it is possible, the sod should be turned under at least one year before the plants are to be set, that it may become well rotted. Where the sod is very old and tough, and there is not time for it to rot, it is better to peel it off and remove it entirely. To replace the bulk and the rich surface soil thus removed, wheel in a lot of chip dirt, or well-rotted yard manure, to be afterward worked in and thoroughly incorporated with the soil. Four feet is none too wide a space to devote to the hedge row; spade and work this a foot deep. The ever-encroaching sod should not be allowed to infringe on this reservation of space while the hedge is young and growing. After it is once well-established it will hold its own with the sod.

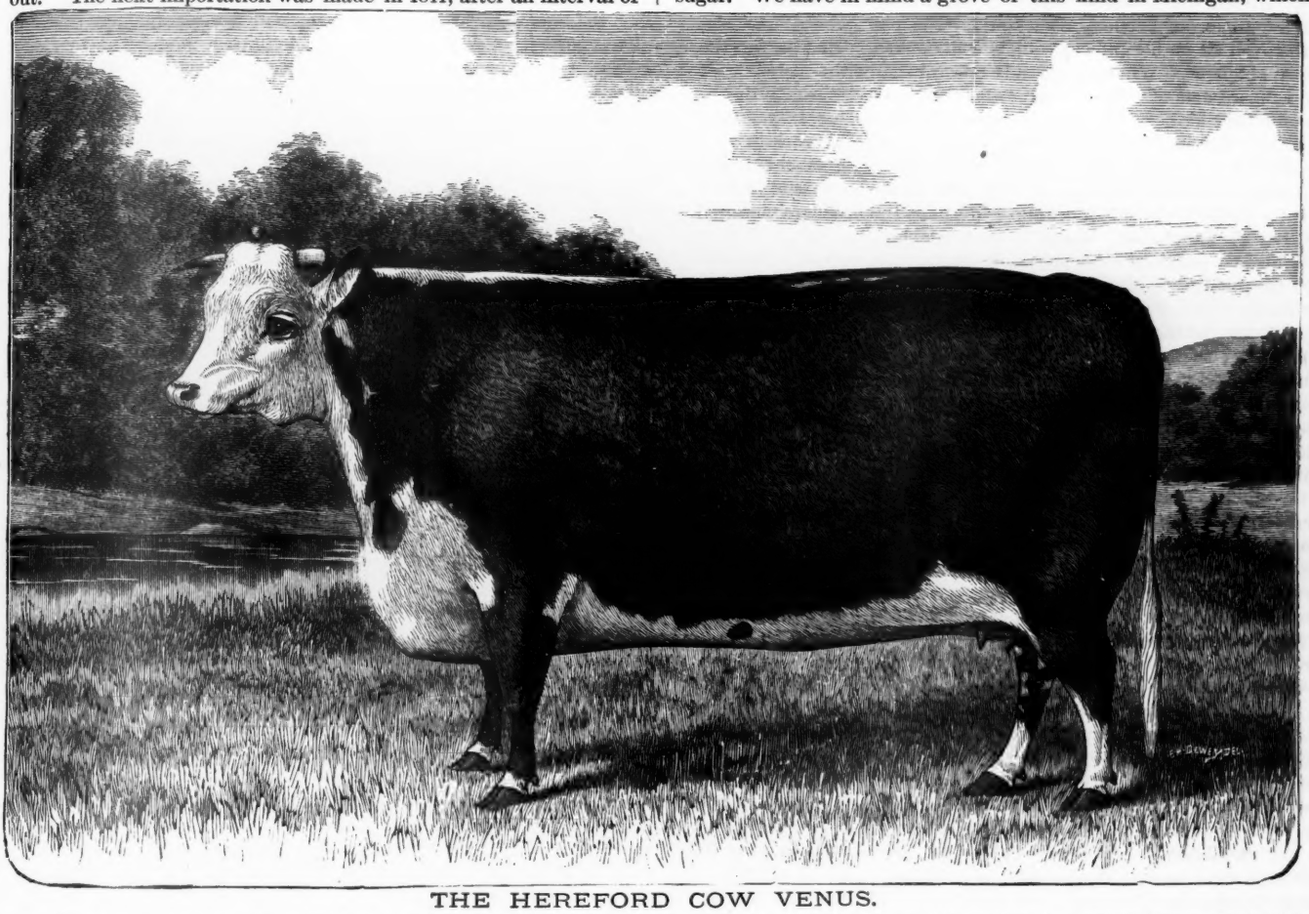
In our northern region early spring is the best time to plant. When planted early in May, the young plants are rooted and started before the hot, dry weather of July and August strikes them. Early autumn plantings, farther south, have been attended with success, I am told. Trees or plants that have been once or twice transplanted in the nursery row should be selected for hedge planting; twelve to fifteen inches is a good height to select, and the plants should be as stocky and full of branches as can be had at that size and age. Set them a trifle deeper than they originally grew in the soil, and water well when planted. Water occasionally during the hot dry weather of the first summer. It is a good practice to plant two rows a foot or so apart, and have the trees of the two rows alternate or "break joints." This gives a thicker ground work without crowding the roots. If seedlings are used instead of the transplanted stock they must be shaded the first summer or considerable loss will be experienced. Better pay a little more and get the transplanted stock in all cases.

But little cutting can be done the first year or two, as the hedge must first become well-established, root and top. Straggling shoots far out from the body of the plant may be nipped off, and any extreme upward growth checked. The growth of a hedge is slow. It takes years of waiting to get a good one; a thoroughly good hedge cannot be had in less than eight or ten years. The

form of a hedge is a matter of individual taste. There is, however, a natural form in which the hedge best thrives; that is, broad at the base, narrowing to the top. This form gives the lower limbs a chance to obtain light, air, and moisture, which they do not have in the square-trimmed hedge. The beauty of a hedge depends upon its solidity and even distribution of limb and foliage. If the lower limbs are forced to reach far out for light and air, the lateral twig growth will be light, and the lower part of the hedge rather open, and if kept cut back in square form, these lower limbs will frequently die out from overcrowding and lack of light and air.

HEREFORD CATTLE IN AMERICA.

The Herefords, after a long struggle for recognition, have attained a place among the foremost breeds of beef cattle in the United States. The first importation was made more than seventy years ago, but Herefords failed to be recognized at their true value, and were bred indiscriminately with other cattle until they "ran out." The next importation was made in 1841, after an interval of more than twenty years. From that and subsequent importations the Herefords have been bred pure, and several champions like Sotham, Miller, the Cornings and others, have stood up stoutly for the white-faces, and showed by breeding them pure that they had the courage of their convictions. But these grand and valuable cattle were in a degree overshadowed by the great popularity of other breeds, until within the present decade. When a Hereford steer won the sweepstake premium as the best dressed carcass in the Chicago Fat-stock show of 1883 there was great rejoicing among the friends of the breed here and in England, for it was felt that its vindication had come. At the sale of the Hereford herd of Mr. T. J. Carwardine, Leominster, Eng., in 1884, the bull Lord Wilton brought three thousand eight hundred guineas, or nearly $20,000, and the entire herd of one hundred and eighty-four head, old and young, averaged about $385. This event increased still more the interest in the breed. Repeated triumphs in the show-ring and on the block have followed. These, together with the enterprise and activity of breeders, have brought the Herefords into deserved prominence. The best herds in England have been culled by American importers, and this country now possesses a large proportion of the progeny of Lord Wilton, and of Horace, another famous bull. The general characteristics of the breed are well known. The massive form, kindly white faces, waxy horns, short legs and bright red color, marked with white beneath, on the withers and brush, are familiar features to all who have any knowledge of American cattle. The great points of the Herefords are: first, their greatest weight is in the parts from which the best beef is cut; and second, they will thrive and fatten on pasturage which would scarcely support some other breeds, though they also respond very readily to liberal feeding. Our illustration is an accurate portrait of the Hereford cow Venus, sired by Lord Wilton, and imported in 1882 by Adams Earl, of Lafayette, Ind., who still owns her. His "Shadeland herd" at Lafayette is made up of Herefords unsurpassed in this country or in England. At the recent Fat-stock show in Chicago this herd was awarded the grand sweepstakes premium for the best herd of any age and breed.



THE HEREFORD COW VENUS.

A Grove of Sugar Maples.—A maple orchard, or sugar bush as it is often called, may be very profitable in the production of sugar. We have in mind a grove of this kind in Michigan, which is a model of its kind. In the center is a sugar house containing the evaporator, one of those made for sorghum sirup being found to make excellent maple sirup. The house was fitted with bunks on one side for the use of the young men, who held alternate watches and kept up the fire all night. Being made secure with a lock, the house served as a place for storing sap-buckets, spouts and all other appliances when not in use. The undergrowth was completely removed, so as not to present any obstacle for the wagon in going from tree to tree to collect the sap. Every part of the sugar or sirup making was conducted with the utmost care, and with an attention to neatness that resulted in almost perfect products. It may be added as an incidental advantage in this care of the grove that it was often in requisition for picnics and other festivals and brought in a handsome income from this source. Besides the value of its sugar product the tree itself is greatly esteemed for its timber. Its varieties, the curled maple and the birds-eye maple, are of great beauty, take on fine polish, and are much used in cabinet work, the inside finishing of houses, the interior finish of steamboats, railroad cars, etc. The straight-grained wood is much used in ship-building. In some sections land may doubtless be as profitably planted with a maple orchard as with an apple orchard

A RAINY DAY ON A POULTRY FARM.

MISS E. K. WINANS, NEW JERSEY.

The alarm clock goes off at half-past five on a January morning, and the poultry farmer wakes to hear the rain driving against her eastern windows, and coming down with a great rushing noise on the foot-deep snow. Plainly it is an Atlantic storm. She lights her lamp, doubting if it is day at all. Everything but the clock announces night. On going to the incubator room she finds that the thermometer is far too high. The valves had opened properly, but the lamp flames, set in a cold evening, were too high for a mild morning. The trays of eggs must all be left in the air to cool while she turns the eggs. She grieves over this, for a large hatch is due, and the eggs last night were peeping vigorously. A warm, wet cloth is laid over these for a few minutes, the chipped sides are turned up, and the machine is closed for the morning. Then comes the getting ready of a big tray for the brooder house breakfast. All the while, sleepy Garry, the servant boy, is stirring meal into a malodorous kettle of meat, onions and cabbage. It has been in the oven all night, and the soup is well cooked. That is for the grown chickens. When all is ready on must come the ulster, hood and rubber boots of winter storms, and then out into the gray dawn, the rain beating her face and the wind pulling at her tray. It is warm and dry in the brooder house, and it is pleasant work to give the little things their food. The warm milk delights them, and they make pretty wreaths around the fountains; only there are two or three dead chicks this morning. Perhaps the brooders were too hot, like the incubator. Going houseward she sees Garry starting with his last pail, and evidently dodging her inspection. No wonder; his pudding is almost liquid, as bad for chickens as it is easy to mix for Garry, and he must get more meal.

After breakfast she cleans her brooder house, not trusting that to any boy; then makes a round of all the other houses. Garry has done well to-day; the chickens are not fastened in, but are content to stay inside their clean, sandy quarters. People have warned her that onions will flavor the flesh and eggs of her chickens, but she does not find it so, and thinks that much Douglass mixture and many onions keep the whole flock bright-eyed and fresh. Many duties she has that are not concerned with poultry, and every two hours she must leave them to feed her brooder chickens. Some day the brooder house will be connected by a shed with the kitchen, but at present every trip means deeper slush. And there is the task of watching the incubator all day long. The large thermometer in the top of the machine has a red line, marking one hundred and two degrees. To her, that line is a banner to be fought for. Running an incubator is playing an interesting game, where oxygen, electricity, the weather and sometimes fate play against one.

The poultry farmer's eggs are hatching well in spite of their overheating. They are spread out on open trays so that the chickens may fall through on cotton beds in the lower part of the incubator. In cold weather they must not hatch that way, for often the lower story is many degrees colder than newly hatched chickens can well bear, but to-day it is one hundred degrees on the bottom of the incubator. She wonders if the directions given by all machine makers are as contrary as are those with hers. She is advised to put in a few eggs, and then more and more, and yet told to give them no moisture the first week, more the second, and all possible the third. How this is to be done when some of the eggs are first week, and some third week ones she is not instructed. To-day there is a musty smell in the damp interior of the incubator; it ought to be washed with hot copperas water, but not while there are eggs hatching. At noon when she turns the eggs again she will put in bowls of hot copperas water. There must be dry straw put in the coops of the half grown chickens. They must be kept warm and dry in order to be fat for their near-by doom.

Now is the day's work done? Yes, after the watch dog is unchained and fed, the eggs are marked and put away, some ordered chickens are put in shipping coops, and the brooder house dishes are washed and the kettle filled with onions and turnips—it is over until the bedtime feeding for the baby chickens. At ten o'clock the farmer lays down her book, listens for a moment to the storm, wishes the wood fire were portable, and goes out carrying dry oatmeal. Most of the chickens come tumbling out, pell mell, when she opens the doors of their brooders, but the babies, poor little sleepy things, must be pulled out and afterward pushed home. She moves the lamp, leaving the elder chickens in half darkness when they have eaten enough and with dismal wailings they go home to bed; and so does she.

"SAPSAGO" (SCHABZIEGER) CHEESE.

HENRY STEWART.

This rather rare and curious cheese affords an instance of a corruption of language which completely covers and hides the true meaning. Sapsago is very clearly a corruption or derivative of the German term *Schabzieger*, from *Schaben* grated, and *Zieger* curd. This cheese is made in Switzerland, and chiefly in the canton of Glarus, where it is locally termed *fromage vert de Glaris* or green cheese of Glarus, by those who use the French language. It is somewhat like our pineapple cheese, a sort of double manufacture, the curd being put through a secondary process which gives to the product its peculiar character.

This cheese is made as follows: The milk, collected upon the mountain pastures, is skimmed and curded in the usual manner. The curd is then put in vessels made of fir or spruce bark, pierced with holes through which the whey escapes. In this condition it is kept in the cool pure air of the high mountains until the autumn, when the herds are brought down to their winter quarters in the valleys. During this time a slow fermentation, moderated by the coolness, goes on in the curd. When the curd is removed to the valley farms it is put in sacks and loaded on to the wagons. On its arrival the sacks of curd are put in a press, heaped one upon the other, and squeezed to expel the remaining whey. The curd is left under pressure for three or four weeks. It is then ground in a mill, consisting of a circular trench or pit of cut stone closely joined and cemented. A strong vertical shaft of wood is fitted in the center and to this is fixed a stone roller of a truncated-conical shape, which weighs a ton and revolves slowly around the circular floor. When the curd is put into the mill it is mixed with two and one-half per cent of its weight of dried and pulverized leaves of a species of *Trifolium*, having deep blue or purple blossoms, locally called blue melilot (but more probably *Trifolium alpinum*), and four to five per cent of salt. During the grinding or crushing, the attendant takes care that the work is evenly done and the curd is passed repeatedly under the roller and ground to a smooth paste. The curd is then shoveled out of the mill into a shallow vat, from which it is put into molds of the form of a truncated cone, of various sizes, from one pound upward. The pasty curd is pressed into the molds by a pestle of hard wood; and for the easy removal of the sticky paste the mold is smeared with sweet oil and then lined with a cloth. As soon as the cheeses are firmly set they are taken from the molds and placed in drying rooms on shelves, where they are carefully guarded against contact with air currents by which the cheeses would be cracked and made to crumble from excessive dryness. The drying continues for a year or more, until the cheeses are quite hard.

The Schabzieger cheese is of a clear green color. The largest cheeses found in the Paris market, where they are mostly sold, are about four inches in height, and the same in diameter, and they sell for sixty-five cents per kilogram or about twenty-seven cents per pound. They are served at the table grated and are eaten with pastry, pies, or with fruit, at the dessert. Their odor is strong, and it requires—for most persons—a considerable training before the palate and stomach become accustomed to the peculiar smell and flavor. This cheese has been an article of manufacture and trade in Switzerland for more than three hundred years.

IMPROVE YOUR LAWNS.

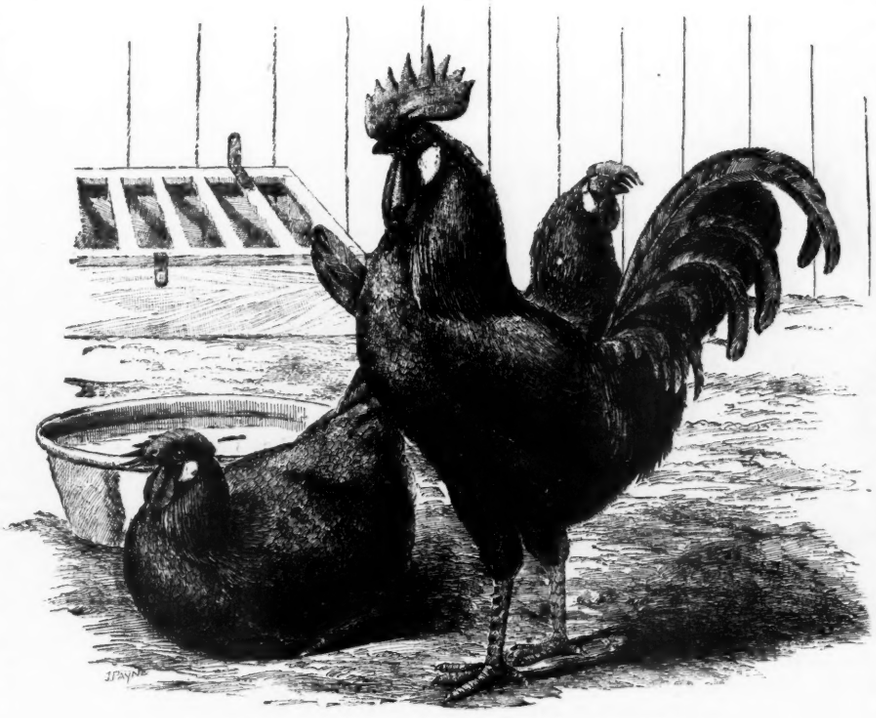
G. A. W. PITTSFORD, VERMONT.

Nowhere does individual taste more clearly betray itself than about the homes of the more or less well-to-do people scattered all over the country. Village improvement societies have done something toward awakening public sentiment in this direction, but individuals can do more by making their own grounds attractive and keeping them in order. Herein lies the secret of success. No amount of elaborate designs can compensate for unshorn grass, untrimmed trees or neglected flower-beds. If only one of the three essentials of a good lawn is practicable, namely, grass, trees and flowers, by all means give us grass. "Distant hills and plains may be made beautiful by trees alone, but all near grounds require this velvety covering to render them attractive to the eye and interesting to the mind." Indeed it has been truly said that "no splendor of flowers or of foliage would compensate for the absence of grass," in which exists the purest green of vegetation. We find, however, a poor and indifferent article on many country lawns. This

is usually the result of too much shade and a neglect to keep up the soil. The best way to remedy the trouble, if moss and weeds predominate, is to plow up and enrich the soil. Grade, if necessary, and sow with lawn-grass seed, and take proper care thereafter. If grass is only thin, more food is evidently wanting. An occasional top-dressing, of some approved fertilizer, through the summer is advisable, but it should be put on just before a rain. A coat of well-rotted manure is beneficial in the fall. When this is raked off in the spring, grass seed should be sown wherever bare or thin places are visible. This treatment with the frequent use of the lawn-mower leaves little to be desired in this direction.

BLACK MINORCA FOWLS.

The island of Minorca, the easternmost of the Balearic Isles, lying off the southeast coast of Spain, has given the name to a breed of fowls which has recently attracted much attention in this country. The Minorcas have points of resemblance to the Spanish and Leghorn fowls, but are larger than either. It is the opinion of many skillful breeders that the black Spanish and black Minorcas were originally identical, but the former has been bred for the white face and other fancy points, while the latter retains the original red face, larger size and greater hardiness of the original. The combs are larger than those of the Leghorns. There are both black and white Minorcas, but the former are principally bred in this country. As will be seen by the accompanying engraving, they are fine stately fowls, with large single combs and long wattles. The face is red, the plumage a glossy black, with metallic green reflections, the legs clean of feathers, and of a bluish willow color. The cockerels weigh about six and a half, and the pullets from five to six pounds. The hens are very prolific layers, producing two hundred large white eggs a year, and even more. The Minorcas will flourish in almost any situation, will bear confinement well, and when at liberty are good foragers. They will keep in good condition on a comparatively small amount of food. They must have warm quarters in extremely cold weather, or their combs and wattles freeze. The hens are non-sitters.



TYPICAL BLACK MINORCA FOWLS.

Black Minorcas have been bred and raised for centuries on the island from which they derive their name, and for a long time in the southwestern districts of England, but they were only recently introduced to this country. They have advanced rapidly in popularity, and have been admitted to the Standard. They have won many prizes at various poultry shows during the past two years, and the breed may be considered as a permanent addition to the choice poultry stock of the country.

How to Prevent Vermin.—Prevention is better than cure, for one reason, because it is easier. When a farmer finds his spring calves pining away and looking miserable from the attacks of lice, he will find it no easy matter to save the calves and rid his stables of the pests. But a few hours spent in efforts to prevent the mischief would have saved weeks of worry and work. To prevent the entrance of these pests, all fowls should be kept from roosting in stables. Fowls will do no harm there if their house is kept clean and the roosts are well soaked with kerosene oil once a month. But half a dozen lousy hens will infect all the stock in the stables and give trouble through the whole winter. For the stock, the best way of keeping them free from vermin is to brush them well once a day, using a stiff brush, to which a little kerosene oil is applied by means of a sponge, or the hair may be rubbed with the oiled sponge and then well brushed. This will keep the animals free from lice and make their coats smooth and glossy, but if used too plentifully it will take off the hair and blister the skin.

SOFT-SOAP ON THE FARM.

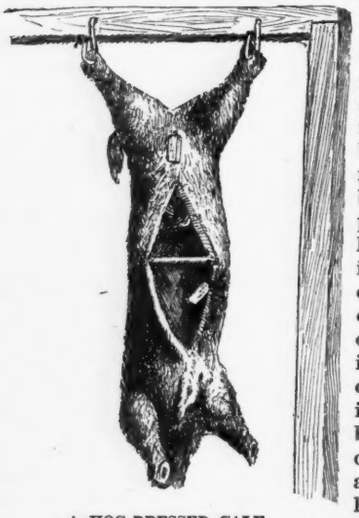
An abundance of what is called "soft-soap" may be had at the store or from the wagon of the venders. Real soft-soap is made, not bought. It is made from the refuse fat of the kitchen. Every economical housekeeper has her pot for "soap grease" which, instead of trading it off with the soap man for soap, often of a poor grade, she makes into soft-soap. The other ingredient necessary is lye, made from the ashes of hard wood. A substitute for lye may be made with the potash of commerce dissolved in water. This solution is used in the same manner as the lye, being mixed with the fat, hot or cold, according to the method adopted in the family. Soap made in this manner is always soft, a brownish, thick, viscid, somewhat jelly-like soft-solid, which by no amount of standing will ever become hard. Potash and soda both combine with fat to produce soap; potash, or lye, which is the same, always makes a soft soap, while soda in the form of sal-soda, or soda ash, always makes a hard soap, but soft or potash soap may be converted into hard soap by adding to it common salt, which supplies soda. What is generally sold as "soft-soap" is simply common white hard soap, to which so much water has been added that it no longer retains its form but becomes a semi-solid mass. If one purchases a quart of this stuff, he buys at least three half-pints of water; we are therefore justified in calling the stuff a "fraud." Besides it is greatly inferior in strength for all the purposes for which it may be used, especially in horticulture, to the home-made soft-soap we have described. If one has an old orchard, the trunks and larger branches covered with loose bark, on which mosses, lichens and still lower forms of vegetation find a foot-hold, and which afford a resting and hiding place for numerous injurious insects in various states of development, the first thing to be done is to scrape off all the loose scales of bark. Use a moderately dull hoe—a sharp one might injure the bark; one with a short handle will allow the lower branches to be reached. Use the home-made soft-soap, dilute it with hot water, stir it well until it is thin enough to apply with a small white-wash brush or a large paint brush. Put plenty of it on the trunks and the larger branches. One should endeavor to apply the soap very early in spring, so that it may not dry up at once, but be gradually washed off by the rains that usually occur at this season. When the trees have had a thorough washing, the bark will present a beautifully smooth appearance that will amply repay one for the trouble. For removing the green growth on the outside of flower pots, this soap is excellent; it has also been recommended as a vehicle to apply kerosene for aphides or plant lice and other insects. One pint of soft-soap is mixed with half a pint of kerosene. Mix thoroughly, add to seven or eight gallons of water, and apply with a syringe. This has been found destructive to the chinch bug.

HOG-DRESSED CALVES.

S. B. CONOVER, NEW YORK.

Farmers having calves to sell can realize the most money for them by slaughtering and sending them to market instead of selling them alive at home. They not only save the middleman's profits, but if the calves are properly dressed they should command as high prices as city-dressed veal, although the latter now sells for from one to four cents per pound more than veals dressed in the country and shipped to the commission merchants. The principal difference is in the appearance, on account of the too often slovenly and careless manner of country dressing. The city butchers understand that in order to meet the wants of their customers, the first-class shop butchers, or retailers who are willing to pay the highest prices, the veal must be dressed to attract the eye of a customer. The calf should be of good form and have a firm and solid feel; the flesh white and well set; the kidneys well covered; and the fat not torn, mussed or bloody, and free from blood or wet inside. The following plain directions for dressing and shipping veals and reasons therefor are made up from an experience of thirty-seven years in handling, dressing and selling calves in the market.

An open shed or building with doors at each end or side, to allow a free current of air and facilitate the cooling and drying as soon as possible, is the best for the purpose. The calf should remain quiet at least two hours before slaughtering. Knock it on the head and hang up evenly by both hind legs, keeping them about fifteen inches apart at the hock joints, leaving the legs on. Cut the throat, neck, flesh and bone through, leaving the head adhering by the skin. Let it hang until all the blood is thoroughly drained from the veins and flesh; then open the carcass by slitting the belly from near the udder to the breast-bone. Remove the entrails, paunch, liver or harslet and lights, using great care not to injure or break the kidneys, or muss the fat around them, or get blood inside the carcass. Should any blood get in, remove it by pressing a clean damp cloth wrung out in cold water against the blood. Do not rub or wash it out, or use any water inside at all. Let it hang without handling until it is thoroughly cooled off and the flesh is set, using a stretcher-stick to hold open the slit in front and facilitate the cooling and drying. After the animal heat has passed off and the flesh is firm and solid, cut or saw off the legs and leg-skins close to the knee-joints, and the head and head-skin close behind the ears. Attach a tag to the bag-skin and another to the skin in front, the tag showing your address in full; also the address of the party the veal is consigned to. Send a postal to the consignees so that they can hunt it up in case of delay in delivery. It is advisable to ship by express to insure quick delivery.

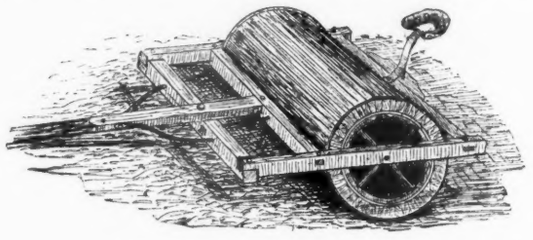


A HOG-DRESSED CALF.

If the calf is killed immediately after being driven or worried the flesh will be feverish and red or dark colored, and will not set or feel firm. If hung unevenly or by one leg it will dry, cool and set crooked, and have a bad appearance. If handled before it is perfectly cooled the flesh will be soft and flabby and will not keep, or sell for full price. If the kidneys or kidney fat are in bad order this defect will injure the sale. If blood gets inside and it is wet it will ferment and turn sour. Leaving the legs and head on until thoroughly set and cold prevents the skin from drawing up and leaving the neck and legs exposed to the air, which would turn black and give the calf a stale appearance. If parts of the legs, leg-skin, head-skin or ears are left on, the salesman will have to cut them off or make a reduction in the weight, thus causing dissatisfaction to the shipper on account of variations between the shipping and selling weights. By using two tags you prevent trouble in case one is torn off in shipping. All calves not four weeks old are liable to seizure in New York City by the Board of Health, who will give a receipt for the calf or calves seized, which receipt the salesman should forward to the shipper, and which the shipper may demand.

A HOME-MADE FIELD ROLLER.

Our illustration, showing a field roller, is from a drawing by J. L. Townsend, Utah Co., Utah. It is constructed from the wheels, tongue and seat of an old mower, with such additional irons and bolts as can be readily obtained at any blacksmith shop. The two mower wheels are first connected by an iron axle that projects into the frame. Around these wheels are fitted about forty-eight pieces of scantling, two by four inches and eight feet long, beveled and nailed together. These are planed smooth on the surface. On each end directly over the wheels is then shrunk a common wagon tire. The frame is composed of scantling four by four inches, bolted through the tenons. The roller when completed is about forty inches in diameter and heavy enough to crush clods. Owing to the size of the roller the draught is very light, a small team being able to draw it all day with ease.



SERVICEABLE FIELD ROLLER.

SOW OATS EARLY.

Oats require a long season for growth, and cool weather; therefore sow them early, but do not sow on frozen ground with the expectation that they will sink down in the mud and sow themselves. This slipshod method will do for the poor ignorant and wretched (no men more so) Egyptian "fellahs" who scatter their seed wheat on the rich mud left by the floods of the river Nile, but not for an American farmer sowing oats in the spring. For this crop the land *must* be thoroughly well plowed and harrowed—it should be plowed in the fall, in fact—and the seed *must* be well covered. And this is to be done as early as possible. Three years ago we sowed oats in a warm spell in February but did not cover the seed deep enough; a hard frost in March killed nine-tenths of the plants. Since then we have sown as early, but cover the seed four or five inches, and then if a hard frost comes only the tops are killed and a new spire will soon emerge from the living root. Two and a half bushels of seed per acre is the right quantity to sow.

COMBINED CORN-CRIB AND PIG-PEN.

We illustrate herewith a corn-crib and feeding floor designed by T. W. Hughes, Davidson Co., Tenn. Fig. 1 shows the end elevation of the crib. It is seven feet wide and eighteen long. The eight posts are of red cedar, eleven feet long on the lower side, and fourteen feet on the upper, and all set two feet deep in the ground. The sides and ends are of fence boards, six inches wide, with cracks between them, one inch wide, for ventilation. The roof projects eighteen inches on the lower side and twelve inches on the upper side. The sloping part of the floor rests upon joists, one of which is indicated by the dotted diagonal lines, and from the bottom of the upper door the floor is horizontal, and so projects eighteen inches to support the let-

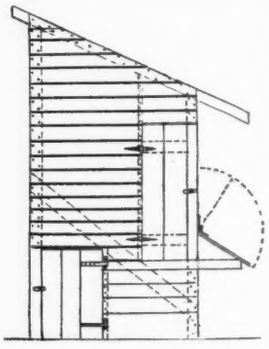


FIG. 1. END ELEVATION

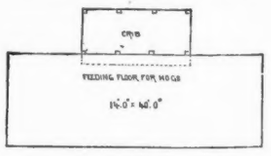


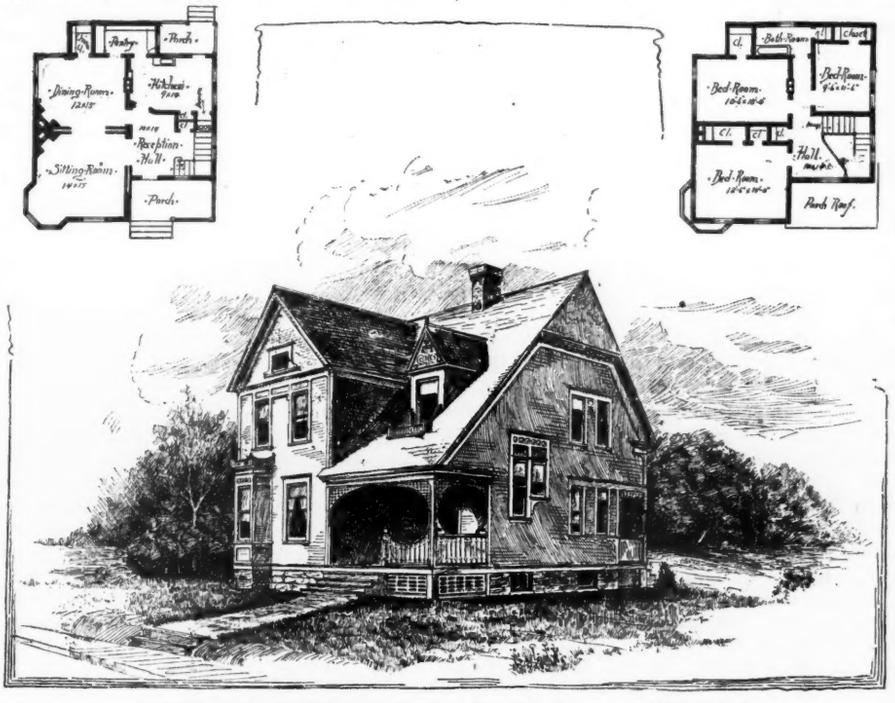
FIG. 2. GROUND PLAN.

down door. By this means the corn falls to the front, where access to it is obtained by letting down the door as indicated by the segmental dotted line in the engraving. The crib is filled through a door near the top of the highest side, a space two and one-half feet wide, next to the roof, being left the entire

length of the crib for that purpose. The upper door in the end gives access to the crib when it is wholly or partially empty. The space below the floor of the crib is used as a pen for pigs or calves, being entered by the lower door shown in the engraving. In front of the crib is a feeding floor for pigs, the ground plan of which is shown in Fig. 2. This floor is fourteen by forty feet, made of inch boards laid loosely upon sleepers, so that they can be removed and stored away when not in use. The drawings are from a crib which Mr. Hughes has had in use for several years, and he informs us that it has proved eminently satisfactory.

A RURAL COTTAGE COSTING $2,000.

Our illustration shows the perspective and plans of a six-room cottage suitable for the farmer, village or suburban resident, with accommodations for a family of five or six, and costing from $1,700 to $2,000, according to the locality where it is built. It is from designs by G. H. Wells, Chicago, Ill. The cellar extends under the entire building, and it may be divided into milk, vegetable and fuel rooms, which last can also contain the furnace, if one is used. The first story is to be nine and a half feet high in the clear. The front entrance is from a porch into the reception hall, which is connected with the sitting-room by a sliding door, and with the dining room and kitchen each by an ordinary door. The stairs leading to the cellar are directly under the main stairway. There is also a closet, and one in the hall for hats, coats, etc. The sitting-room is well lighted, and although not large has abundant wall space for furniture. The corner bay adds much to its size, which is not taken into account in figures given on the plan. The dining-room is large enough to seat comfortably eight persons at the table, and still allow space for necessary articles of furniture. The kitchen is well supplied with closet, cupboards and shelves in convenient places. The windows are all three feet above the floor, and tables may be set anywhere along the wall, without concealing a hiding-place for dirt, as with low windows. The kitchen will be wainscoted and the openings all trimmed with casings having no moldings, for ease in cleaning. The pantry is to have flour boxes, drawers, open shelves, and cupboards with glass doors, and a wide work shelf under the window. Sink, range and cupboards are brought close together, so that while there is plenty of room, there are but few steps required in doing the work. The second story is nine feet high in the clear. It contains three bedrooms, two having each a large closet, one two closets, and one closet to spare in the hall for linen. There is also a small closet in the bathroom. Space is provided for beds, dressers, etc. All the rooms are well lighted and ventilated. There are chimney openings for stoves, to be placed in every room if desired, although furnace heat would be more satisfactory in some respects. It will be noticed that the four largest rooms in the house are each fifteen feet long one way, and any of the less expensive carpets can be laid without cutting. The plumbing fixtures required are a bath-tub and sink, with hot and cold water, and a boiler connecting with the kitchen range. There is space in the bathroom for a water closet if desired. The exterior of the house although plain is of neat and pleasing appearance. The plan shows a house compact, convenient, neat and comfortable, capable of accommodating quite a large social gathering, and comparatively cheap.



PERSPECTIVE VIEW OF RURAL COTTAGE.

IMPROVED CULTURE OF COTTON.

The ordinary yield of cotton is not sufficient to pay the grower his expenses and the common wages of a laborer. The census reports give the average yield per acre in Georgia as 137 pounds; South Carolina, 140 pounds; Alabama, 130 pounds; and the highest, in Louisiana, 220 pounds. As a bale, or 450 pounds, per acre is not uncommon with good farmers, and the best culture produces 1,000 pounds, it is evident that the lowest yield must be much below the average. Indeed, many fields produce no more than fifty pounds per acre, and some wretched patches may be found, without going far to find them, upon which as little as fifteen to twenty-five pounds per acre only is grown. What a waste of labor and of land, and of possible wealth to the community!

Cotton is a crop that exhausts the land and requires a rich soil or a well manured one to yield its best, and its best, as yet, no one knows; but 1,500 pounds of lint per acre has been grown by a well-known farmer in Georgia. It requires nitrogen and phosphoric acid, but it gets only the latter, which alone is as useless for the crop as food would be to a man without water. Plants must have every element they require, or they cannot grow, and the rule among the cotton planters is to use "phosphate" only. This results in a starved crop and loss of labor. It has been found that stable or yard manure, or rich compost in which this forms a part, is the best food for the cotton plant, and the best place to put this food is in the rows where the seed is planted. A good compost is made of pen or yard manure, black soil from the woods, or a swamp, or from ditches, with cotton seed and phosphate. Only the cheapest fertilizers can be used for this crop, on account of its low price, and the cheapest is made at home. Southern farmers waste millions of dollars' worth of manure every year by turning their cattle out in the woods and leaving their hogs to run on the roads. Pork can be made in the South for three cents a pound by feeding corn, sweet potatoes, peas and bran, but millions of pounds are purchased at ten to fifteen cents a pound. And all the manure which the hogs would make if kept up and fed would be worth as much for the cotton crop as all the "phosphate" which is bought. To produce profitable crops of cotton a thorough change is needed. Long ago in these columns Southern farmers were told of the benefits of diversified crops; of growing clover, grass, peas and other fodder crops and breeding stock and making manure; and now we urge a better culture of the leading Southern crop, not that twice as much cotton may be grown and the market value depreciated, but that the present crop may be grown on one-third of the land at a third of the cost for the culture, and the spare land be put into corn, peas, millet and clover, and then the clover turned under for cotton. A rotation of crops is indispensable for profitable culture of the soil, and under this system an excellent rotation would come in. One enthusiastic and progressive farmer in the South says he is not going to stop until he grows five bales of cotton to the acre. He has grown three bales and will grow five beyond a doubt, but we dare say he will not stop trying for more, even then.

Cabbages and Morals.—Fortunate is the farmer who has a good lot of cabbages, kept by covering them with the roots up or in any of the several ways we have suggested from time to time. Still

more fortunate is he who has placed all the soft cabbages, those which failed to make heads last fall, in cold-pits or frames, and can take them out now in fine condition for the table. These, as well as those which headed properly last fall, will make a welcome treat to the farm animals. Our farmers may well follow the example of the English in regarding cabbages, as well as kohl-rabi, as a farm crop. They will be found to pay as an occasional feed in the early spring in their moral effect upon the animals as well as in improving their health, and with an occasional feed of potatoes to improve digestion. When we speak of "moral effect" we mean that such occasional luxuries promote comfort and content, which mean more milk, more work, more eggs. This shows a relation between the man and his animals very different from that seen on some farms where the animals all turn from the owner at his approach, knowing that their advances will be repelled and instead of an apple from his pocket they will be likely to get a cuff and a cross word. Yes, there is much in the morals of the barn-yard, and like master like beast. In giving cabbages to fowls it is well to suspend them within their reach, so they can peck at them as they wish, and not soil them as they will do when the heads are thrown upon the ground. After the head is gone do not throw out the stump, but place it within the reach of the fowls and see how they will enjoy pecking at it if it is not too hard and woody.

PROFITABLE MARKET GARDENING.

JAMES K. REEVE, OHIO.

In the successful prosecution of the business of market-gardening, very much depends upon having a continuous and well diversified supply of seasonable products. To be sure, cabbage sells for a much better price in June than in August, but if, even after the price has reached its lowest figure, a barrel or two can be added to the load every day, it will show in the total sales at the end of the season. During the past season I sold string beans for more than one hundred days; at no time did they sell below eighty cents per bushel, and at that only temporarily during the height of the supply, and toward the close they were up again almost to spring prices. Thus it will pay to continue the planting of what we commonly term "early vegetables" well on into the summer. It will also pay to start some of the fall vegetables so that they may be commenced upon while the summer crops still hold precedence. Thus turnips can be sold in July and August to a small extent, and at the prices then obtainable, eighty cents to one dollar per bushel, it is worth while to have a few on hand. So with Lima and White Navy beans. At twenty cents per quart for the former and twelve and one-half cents for the latter, it pays to have a few to pick and shell out by hand before the main crop is ready to be threshed. Celery, also, may be had in time to sell regularly for two full months before the regular marketing season is over.

A full supply of fall products, sufficient for the near market at least until the first of March, should also be grown and safely stored for winter use. As winter tightens its grip, and home supplies become depleted, the demand and consequent value for these products increases. Cabbage, turnips, celery, parsnips, carrots, beans, pumpkins and potatoes, should be "in stock" with the regular gardener until the succeeding spring work demands his whole time and attention. Of the earlier crops it is not best to attempt to grow more than the probable needs of the home market; but of the later crops put in all that time and space will allow. Some of these can be grown very cheaply, such as cabbage, turnips and carrots, and even if sold at a low price, a car-load of these sent to the nearest city market will rarely fail to repay well the cost of production, and will prove a very acceptable addition to the year's income.

It must be kept in mind that in gardening it is the long, steady pull that tells the story of the year's work. It is not the good crop of this or the poor crop of the other, that determines the question of profit or loss; but in the steady run of one hundred and fifty days of sales, a few dollars more or less each day settles the question, and these few dollars more can only be had by a steady succession of all salable crops, from the earliest to the latest, while they may easily be made *less* by thinking that you are through with cabbage after your "extra early" are off, or by thinking that no one wants peas after the Fourth of July, or celery before Thanksgiving. It may be that some of the products, during part of the season, will not repay the expense of cultivating, gathering, and selling. Yet even if they are individually unprofitable, it pays to have them on hand, so that your customers may learn to rely upon you for a full assortment all the time. Customers are easily had, and easily held, when they know they can depend upon being regularly supplied with a good quality and good assortment of vegetables. But when the route is not gone over regularly, or the supply is not kept up so that each may obtain just what he may happen to want each day, they are easily pursuaded to buy elsewhere. Of the various ways in which the sales of market garden produce may be made, none is so well calculated to bring in the ultimate profit as a well established route gone over daily with the wagon. It is important that the route be as compact as possible, as time saved is money saved in two ways—it allows your driver and horse to return the sooner to other work, and it enables you to visit more customers before your competitors. Other things being equal, until your trade is well established, the one who comes first makes the sales.

GRAFTING FRUIT TREES.

Many appear to think that grafting, or inoculation, as budding is often called, has, like vaccination, in the animal subject, in some mysterious way the power to so change the nature of the tree that it will bear better fruit than before. We have "grafted fruit" and "natural fruit," often used as equivalent to good and poor fruit. Grafting is simply planting a cutting, but instead of planting it as we do most cuttings in the soil where, under favorable conditions, it will take root, the cuttings are planted in the body, or the wood of an old tree, and instead of forming roots, the graft unites with the old, and "takes" and becomes in all respects a part of the "stock," as the tree that is grafted is called. There are several kinds of grafting, the mechanical operation varying, but all having the same end in view—to convert or change a tree from an undesirable kind to a variety we prefer.

The cuttings, or cions, or grafts, demand as much care in their selection as if they were young trees to be planted. They are usually cut in autumn, after the leaves have fallen, and should be of the last summer's growth, new shoots at least a foot long. These should be cut from bearing trees, making sure that these are of the kind we wish to convert. The cions are to be tied—or better secured with small copper wire, as string may decay—into bundles of convenient size, and accurately labeled. The bundles of cions are placed in boxes and carefully surrounded with sawdust or moss, and kept in a cool cellar. They must be inspected occasionally, and if the packing material is becoming dry, give it a slight wetting. Some pack their cions in boxes of sand or sandy soil and bury them below the reach of frost, and where water will not settle.

Some methods of grafting are quite difficult, but the two most in use are very simple and every boy can practice them. The cleft is the most simple and the most common. The cion is cut with a sharp knife, in the form of a wedge. A branch of a stock is cut off with a proper saw, and with a heavy knife, struck with a mallet, a split or cleft is made. This is kept open with a wooden wedge, and the cions, usually two in a large stock, are carefully set, so that the inner bark of the cut portion of the cion and that of the stock will come in contact. The wooden wedge, being carefully removed, the spring of the stock will firmly hold the cions. All the bare places, on both stock and cion, are covered with grafting wax to protect them from rain and air.

Crown grafting differs in cutting the cion upon one side only, to form a half wedge. The bark of the stock, it being cut off as before, may readily be lifted with a wedge of iron or hard wood thrust between the bark and wood, to allow the cion to slip in between the two. The bare surfaces are waxed as before.

BOILED DOWN.

One of the essentials of soiling is a fertile soil.

Every farm ought to have its experimental patch.

The early killed is the easily killed weed, and the weed that robs the crop least.

If you are careful to keep the furrows straight, you will do faster and better plowing.

A diversity of crops distributes work, receipts and expenses more evenly through the year and through the years.

In no other way can the farmer so radically do the work of Nature to his advantage as by using tile; for underdrainage both lengthens the seasons and deepens the soil.

The smaller the field the more fence required and the more land taken from cultivation. The more oblong the field, the more fence required to inclose a given area; conversely, the nearer a square is the field the less fence is required.

THE LAW ABOUT HIRING HELP.

EDMUND P. KENDRICK.

The relations between a farmer and his hired help are so important that the legal effect of the agreement between them should be understood by both parties to the contract. In the first place, I would suggest that when a farmer hires a man to work for him, if the engagement is for any considerable length of time, the agreement should be in writing. A large part of the business which comes to a lawyer's office would be unnecessary if the original agreement between the parties had been put in writing. Not only may the parties not understand each other at the start, but their memories may honestly differ as to the terms of the contract. When dissensions cause hard feelings, one of the parties, thinking that "one man's word is as good as another's," often willfully misrepresents the facts, and insists that the agreement was different from what he knows to be the truth. All this could be avoided by a carefully drawn contract, setting down the terms of the agreement and signed by both the farmer and the hired man.

A verbal agreement between the employer and the employé is, however, in most cases just as good in law as a written one, providing it can be proved. The principal exception is in the case of a contract which is not to be performed within a year from the time it is made. The laws of most States say that a contract which is not to be performed within a year cannot be enforced unless the contract, or a memorandum of it, is in writing signed by the party to be charged. If a farmer hires a man to work for him for one year, the time to commence the day the contract is made, or possibly the next day, the agreement need not necessarily be in writing. But if the time is to commence say a week or a month hence, it is not binding on either party if it is only a verbal bargain. If such a contract is verbal only, the farmer can discharge his help at any time, and the help can quit at any time without being liable for damages, and generally without loss of pay up to the time of leaving. It should be remembered that a minor is not bound by any contract of this nature, whether verbal or in writing; and while the employer, if of age, will be obliged to carry out the provisions of his agreement, the employé, if a minor, may break it at any time, leave his master's employment, and collect what he can prove his services were worth up to the time of leaving. This is so although he looked as if he were of age, or even if he falsely represented himself to be such.

When an agreement has been once legally made, between persons lawfully competent to contract, it is binding on each party, and neither can withdraw from it nor refuse to carry it out until the time has expired, without being liable to the other for the damages caused by his withdrawal or refusal. For example, a farmer hires a man to work on his farm for six months. Just before haying the man finds he can get more wages on another farm, and leaves his employer to go to the other place. The man is liable to the farmer for the damage which his quitting work has caused him. This generally would be the increased wages he would have to pay for a man to take the place of the man who had left. Possibly if he could not get any one else just at that time the man might be liable for damage to the crop, providing it could not be secured in season. In most States the man would also lose his right to collect any wages for the time he had worked. This is on the principle that the contract is an entire one, and unless it is entirely performed nothing is due under it. There are, however, a few States in which the courts have held that in such a case the man can recover what his services were reasonably worth up to the time he left, less the amount of damages caused by his leaving. It has been so held in New Hampshire, Iowa, Indiana, Mississippi, Texas and Nebraska; but the law is generally as first stated above.

There is another exception to this rule, which some States have recognized. In an ordinary contract for hiring, for a definite time, if it is not provided otherwise, no money is due until the whole contract is performed. This is so even if the contract says the pay shall be so much a month, or so much a week, day or hour; where, however, the farmer or employer agrees to pay so much *every* month, or at any stated time, the wages are due and owing to the man as a completed contract to that extent when the pay day comes around, and it has been held in some States that these wages are not forfeited if due and unpaid before the man quits work. If a written contract is made, it might be advisable, in order to avoid any misunderstanding, to insert a provision that any claim to unpaid wages is to be forfeited in case the workman leaves without cause before the time has expired. As in many cases no damages can be collected of the laborer, because of his financial inability to pay them, it is sometimes provided in the agreement that a certain part of the wages shall be kept back until the expiration of the term of service.

There are certain things which will justify a farmer in discharging his help, and certain things which will justify a man in leaving the service of his employer before the time is out and without liability for damages. The man may be discharged if he disobeys the lawful and proper orders of his employer, if his conduct is immoral, if he uses insulting language to his employer or his family, if he is frequently drunk, if he habitually neglects his work, if he is insubordinate or defrauds his employer; also for committing wanton injury to his employer's property, or for incompetence by reason of physical or mental defects not discernible when he was hired. It has been held that if the man is intoxicated when he comes to commence his work, the farmer need not take him. In case the man is discharged for cause, he is entitled to what his services were worth up to the time of his discharge.

Of course, if the conduct of the farmer is such that the man is justified in leaving, he can recover his wages for the time he has actually worked. Among the causes which will justify the man in leaving are any improper conduct on the part of his employer, such as an assault on him, insufficient food or lodging, compelling him to do unlawful work, such as unnecessary work on Sunday (necessary farm work, such as taking care of live stock, is not unlawful), the prevalence of an epidemic which renders it dangerous to remain, and any acts of the farmer prejudicial to the morals of the workman or to his safety, health or reasonable comfort. Habitual blasphemy on the part of either has been held a good reason for the other dissolving the relations existing between them, unless both are addicted to the same bad habit. Sickness of the man for a lengthened period—in one case two weeks—releases both parties from the contract. The employer is not bound to wait unreasonably for the restoration of the employé's health, and the necessities of the employer are regarded as a measure of what is reasonable. Slight grounds for discharge or for leaving are not regarded as sufficient, and the burden of proof is on him who sets up the grounds to show that they are valid and sufficient. When a laborer has once quit his employer's service, the employer is not obliged to take him back again, although the man changes his mind and wants to go to work again. It has been held that when a man has good cause for leaving and throwing up his contract, and does not do so at the time, he waives and condones the cause and cannot afterward rely on it as a good reason for quitting his place.

When a farmer discharges a man before his contract time is up, and without sufficient cause, the man can bring suit and recover his wages then earned, or he can sue for the damages sustained by him by reason of the farmer breaking his contract. These damages are the amount of his wages at the contract price until the end of the term, less what he has earned elsewhere, or what he might, by due diligence, have earned elsewhere.

If a farmer hires a man for no definite period, either may dissolve the relation at any time. If no definite amount is agreed on for wages, the man is entitled to collect such sum as his services were worth, or the usual price for such services as he performed at the time and in the locality in which the work was done.

It may not be generally known that if a person entices a man who is under contract with another to work a certain length of time to leave his employment before the time has expired, such person is liable to the employer for the damages sustained by him by reason of the laborer quitting his service and breaking his contract. Such is the law. He may, however, induce the laborer to leave his place and come and work for him when his time is up, without liability for damages.

I add a form of contract between a farmer and his hired help, the details to be supplied according to circumstances:

Agreement made this —— day of March, A. D., 1889, by and between A B, of X, and C D, of S. C D hereby agrees to work for said A B as farm hand for the period of six months, to commence March — A. D., 1889, for the wages specified below, and during that time to faithfully perform all work reasonably required of him by said A B. A B hereby agrees to employ said C D during said time, and as wages to provide him with board, lodging and washing, and to pay him at the rate of——dollars per month, payable as follows: Ten dollars monthly, to be paid for each month on or before the 15th day of the following month; the balance to be paid at the completion of this contract. It is mutually agreed that if said C D should without good cause fail to perform his part of this agreement, or should abandon his service before the expiration of the time agreed on, all claims to any unpaid wages are released and forfeited to the said A B.

A B.

Witness: E F. C D.

KENTUCKY SOILS THAT NEED POTASH.

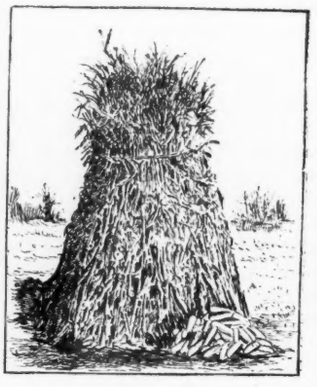
M. A. SCOVELL, KENTUCKY.

The soil of the Kentucky Agricultural Experiment Station farm is what is known in Kentucky as a Blue-Grass soil. It is derived from the gray and blue limestones of the upper portions of the Trenton group of the Lower Silurian. These beds are fossiliferous, varying in character from thin bedded blue limestone with rich phosphatic layers to thick bedded semi-crystalline gray limestone. The rocks are cavernous. The soil varies in its relation to the rocks by the mixing with it of a retentive clay, thin and derived by disintegration, or having a depth increasing to many feet. Two different kinds of soils are known; one having a red clay sub-soil, porous

KENTUCKY CORN, FIG. 1.
Manure, none. Yield, 26.8 bushels ears, 3,150 pounds fodder per acre.

KENTUCKY CORN, FIG. 2.
Manure, 300 pounds superphosphate, 150 pounds sulphate ammonia (equals 45 pounds phosphoric acid, 30 pounds nitrogen). Yield, 29.1 bushels ears, 3,450 pounds fodder.

KENTUCKY CORN, FIG. 3.
Manure, 100 pounds potash sulphate, 150 pounds ammonia sulphate (equals 25 pounds potash, 30 pounds nitrogen). Yield, 60.3 bushels ears, 4,350 pounds fodder.



KENTUCKY CORN, FIG. 4.
Manure, 100 pounds potash sulphate, 300 pounds superphosphate, 150 pounds ammonia sulphate (equals 25 pounds potash, 45 pounds phosphoric acid, 30 pounds nitrogen). Yield, 63.4 bushels ears, 5,150 pounds fodder.

and having a fine natural drainage, the other with a light clay subsoil, which is often deficient in natural drainage. The soil of the experimental farm is of the latter class, and although on a ridge, from lack of drainage is quite wet in the spring. It has been in cultivation for a long time not definitely known. At least three crops of hemp were raised prior to 1860. In 1863 it was planted in corn, in 1870 and 1871 it was in wheat, in 1872 it was put in meadow, in 1881 it seems to have been in clover, in 1882 in millet, and in 1887 in rye. In the field where the experiments were made with corn it is believed that manure has never been applied.

The plats were one-tenth acre each—24 feet wide by 181.6 feet long. The plats were separated from each other either by paths three feet wide or a road ten feet wide. The corn was planted in rows three feet wide and in hills three feet apart. Six to eight kernels were planted in the hill by hand to insure a perfect stand. When up it was thinned to four stalks and finally to two stalks in each hill. The fertilizers were applied broadcast to each plat separately, after the ground was prepared for planting. Marking out was done, however, afterward. Great care was taken in thus broadcasting the fertilizers that the fertilizer should be equally distributed over the plat, but not to allow it to blow over on the neighboring plats. In order to insure equal distribution, the fertilizers were mixed with moist earth before being applied.

The combinations of the fertilizers were made and applied to ascertain whether the soil needed to be fertilized, and if so whether it needed all three of the essential fertilizer ingredients, a combination of any two of them, or only one—the essential ingredients being nitrogen, phosphoric acid and potash. The nitrogen was applied in the form of sulphate of ammonia, containing 20.56 per cent of nitrogen; the phosphoric acid in the form of superphosphate, containing 14.76 per cent of available phosphoric acid; the potash in the form of sulphate of potash, containing 53.16 per cent of actual potash. The corn was cultivated with a two-horse cultivator, three times, and hoed twice for the purpose of keeping all weeds out.

Observations were made from time to time while the corn was growing. Another plat containing tobacco stems always appeared to the best advantage, from the time the corn was up until it was ripe. Those plats containing potash could be distinguished from the others by the darker green appearance of the stalks and a more vigorous growth. When the corn was ripe the ears on the potash plats were so much larger than on the other plats that the distinction could be noticed at a distance. It should be noted that the manured plat received the application of the manure in the fall previous to the planting, and that the tobacco stems were scattered on the ground on the tobacco plat before harrowing it. The season was very favorable for the production of a good corn crop.

From the results obtained we find—*First*, That potash alone is the fertilizer for the corn crop on the experimental farm. *Second*, That from a financial point it would be throwing money away to put on fertilizers containing only phosphoric acid and nitrogen, which are the only essential ingredients found in many of the fertilizers sold in Kentucky. *Third*, That from identical results obtained on potatoes, hemp and other crops it is believed that the soil is deficient in potash. *Fourth*, That these results indicate that the worn soils of the Blue-Grass region, or at least those belonging to the same class as our experimental ground, need potash to restore their fertility. But it should be stated that there is no reason to believe, as yet, that these results are applicable to soils of the other geological formations of this State. The statistics for plant food

MASSACHUSETTS FODDER CORN, FIG. 1.
Manure, nothing. Yield, 1,140 pounds fodder per acre.

MASSACHUSETTS FODDER CORN, FIG. 2.
Manure, 500 pounds sulphate ammonia (equals 20 pounds nitrogen). Yield, 1,400 pounds fodder.

MASSACHUSETTS FODDER CORN, FIG. 3.
Manure, 100 pounds dissolved bone-black (equals 16 pounds phosphoric acid). Yield, 1,500 pounds of fodder.

MASSACHUSETTS FODDER CORN, FIG. 4.
Manure, 500 pounds muriate of potash, (equals 250 pounds potash). Yield, 6,260 pounds fodder.

and yield are at the rate per acre, as given under the illustrations, each picture representing the entire crop as harvested from the one-tenth acre plats. Note the remarkable increase in the crop as soon as potash was supplied, and how potash alone, applied at a cost of only $3.20 per acre, produced the largest yield (see Fig. 6) of both grain and fodder—more so than the complete fertilizer (see Fig. 4) costing nearly three times as much.

[This soil testing system was introduced by Prof. Atwater through the AMERICAN AGRICULTURIST, but the application of photography to preserve comparisons between the crops growing on different fertilizers was perhaps first carried out by Dr. C. A. Goessmann at the Massachusetts Experiment Station. He has conducted for four years tests like those above reported as producing such marked results in Kentucky. The longer the tests in Massachusetts are continued, the more the lack of potash in that soil is demonstrated, as our reproductions from photographs of the 1888 crops so plainly show. The soil at the Massachusetts station, however, is far different from that at Lexington, indicating that these tests must be applied to each class of soils to get results that will apply to such soils. The experimental plats at the Massachusetts station are a friable loam with a retentive sub-soil of clay that is nearly filled with gravel and small stones in the lower strata. Previous to the beginning of the experiments the land had for one or two years, at least, been under grass. Before that it had at times been used as a garden and had received some applications of barnyard manure. The plats were planted with corn for two years (1883-4) without manure of any sort, at which time the yield was a uniform minimum one, so that the results must be accepted as conclusive. The pictures of the Massachusetts fodder corn are from photographs of one-tenth acre plats, but the figures show the rate at which the plant food was applied per acre, also the rate of the yield per acre.]

KENTUCKY CORN, FIG. 5.

Manure, 100 pounds potash sulphate, 300 pounds superphosphate (equals 25 pounds potash, 45 pounds phosphoric acid). Yield, 69.9 bushels ears, 4,900 pounds fodder.

KENTUCKY CORN, FIG. 6.

Manure, 160 pounds potash sulphate (equals 40 pounds actual potash). No other fertilizer. Yield, 80 bushels ears, 5,400 pounds fodder.

A NEW TOMATO—THE LORILLARD.

The forcing of tomatoes for the markets of our large cities is assuming greater proportions from year to year, and the products of Northern forcing-houses are already competing effectually with the importations from the Bermuda Islands. While a few years ago tomatoes were forced merely as a matter of curiosity, there are now many greenhouses devoted exclusively to their cultivation, and additional glass structures for the purpose are being erected in rapid succession. With proper buildings and a thorough knowledge of the best methods of this special culture very satisfactory results may be realized. An important consideration in forcing tomatoes is the selection of suitable varieties, as some of the most valuable kinds for out-door culture are deficient in the necessary qualifications for profitable forcing. Our illustration represents a new variety, the Lorillard, which possesses these requisites in a remarkable degree, and was pronounced, by the Committee of the Society of American Florists the best tomato for forcing under glass. It originated with Mr. John C. Gardener, by crossing the Acme with the Perfection. It is of medium size, depressed globular, vermilion scarlet, changing to a bluish tint when fully mature. It sets freely with four and five fruits to a bunch, all of remarkably uniform shape and size, ripens evenly, is very firm and heavy, and of very good eating quality. It bears abundant crops and is claimed to be equally valuable for outdoor culture as for forcing. The fruits from which our engraving was drawn were ripe about New Year's, and were taken from plants grown in ten-inch pots. The plants had been trained to one stem only, by cutting off all the lateral shoots. Sixteen inches of bench room was allowed to each plant, the stems being supported by wires stretched from the bench to the roof.

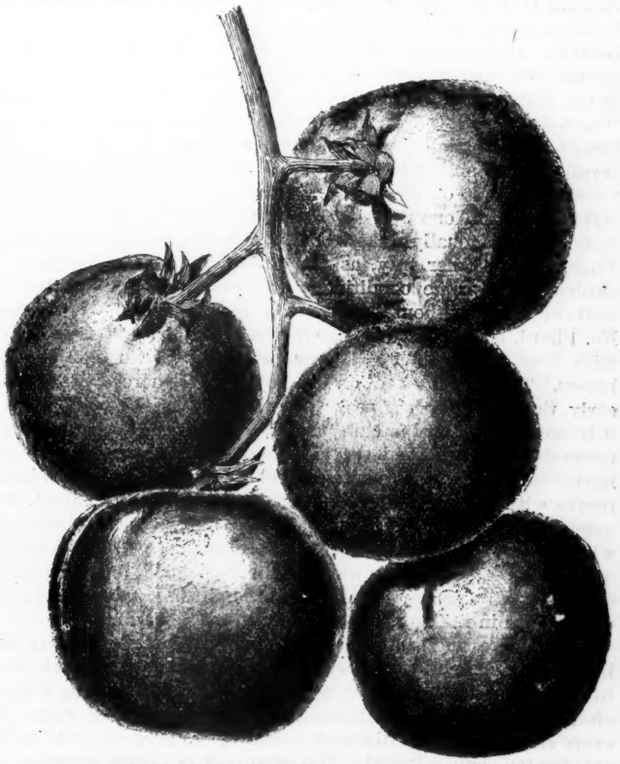
SHALL WE DIG THE GARDEN IN THE SPRING?

JOSEPH HARRIS, NEW YORK.

Some years ago the writer was sowing a thirty-acre field to barley. The field was in corn the previous year, and was well plowed in the Autumn after the corn was gathered. Our plan was to cultivate and harrow the land in the Spring and drill in the barley—no plowing. But for some reason a strip running across the lot was plowed in the Spring. All the rest of the field was sown without plowing. The drill ran across the unplowed strip of land. When the barley began to show above ground, and for a week or ten days later, one could see to an inch, all across the field, just where the land had been plowed. On the plowed strip the barley was many days later in germinating than on the unplowed land.

I could not at first account for the fact, but after thinking over the matter I came to the conclusion that the plowed land was much colder than the unplowed land. During the Winter all the land was frozen solid, a foot or more deep. In the Spring, as soon as the snow disappeared, the sun warmed the surface soil; and as soon as it was dry enough we commenced to stir it with the harrow and cultivator, working the top soil three or four inches deep, and admitting the rays of the sun. But on the plowed strip this warm surface soil was plowed under, and the cold, almost frozen earth underneath was turned up and the barley drilled into it. Looking at it in this light, no wonder the barley was slow in germinating.

It was a new idea to me, and I have been acting upon it ever since, not only on the farm but in the garden. For our earliest



BUNCH OF LORILLARD TOMATOES.—(*One-third Natural Size.*)

peas we do not wait till the soil in the garden is dry enough to dig. As soon as the frost is out of the surface we make the rows with a hoe, two or three inches wide and about two inches deep, and sow the peas in the row. If the day is sunny and the earth dry, the soil on the surface will be light and dry, and we cover the peas by putting this light, dry soil on top of the peas with a steel rake. Sometimes we strew a little horse litter along the rows as a protection from probable frosts to come. But with or without this, we have never known the peas injured. In fact, we have several years started the peas in the house, and planted them, as above, in the

rows in the garden when the sprouts were from half an inch to an inch long, and, so far as we know, have not lost a pea, though we are careful to sow pretty thickly, and should not be likely to miss any if ten or fifteen per cent of them were killed.

Outdoor celery plants are raised by sowing the seed the moment the frost is out of the surface. We have such fine plants that we are satisfied that it is not desirable to wait till the land can be spaded. Put in the seed. Frost and snow will not hurt it. It will come up after many days—say in three weeks or a month. Sown thus early, when the ground is perhaps not entirely free from snow, there is no danger of the seed failing from lack of moisture or covering. Early beets are raised in the same way with decided advantage; also onions and lettuce. For crops about which there is no special need of hurrying we shall continue to plow or spade, but it is well to know that if the land is made ready the previous Autumn, we can sow or plant many of our early crops without waiting to invert the soil.

RAISING NO. 1 HARD SPRING WHEAT.

I. C. WADE, DAKOTA.

The valuable grade of spring wheat known in the market as "No. 1 Hard" is grown only in the Northwest. The first task of the farmer who begins to raise this crop is to unlearn a good deal that he learned at the East and to accustom himself to new methods. The prairie sod must first be turned over to a depth of three to four inches, and then thoroughly pulverized by either a screw pulverizer or a disk harrow, leaving it as fine as possible. (The reason I prefer this to back-setting is that the second and third years' crops are better with this treatment; the seed-bed is more favorable to a good crop than the one back-set.) The second year the plow should go a trifle deeper; the third and fourth year a little deeper still. Then the land is pretty generally tamed, provided the breaking has been well done, which is the great essential. The preparation of old ground is quite different. At first it was thought best to summer fallow. This I regard as a mistake; at least, the usual plan is better—to let the ground lie fallow one year for rest. But it is different with a piece of old land full of weeds. In that case the remedy is plowing, the earlier in the fall the better, as late plowing is inferior to spring plowing. With a double plow, —each plow with a cut of twelve to fourteen inches,—and four good horses or mules, you can turn over every day five to eight acres, four to six inches deep. The ground having been nicely turned over, put on double 32-foot harrows, or 64 feet wide, with eight horses and one driver. I drag first the same way as the furrows; then diagonally across. It is still better to drag a third time, diagonally the other way, as this leaves the seed bed as fine as a garden and in prime condition with ground so marked that the drill can follow without baulks. The seed, which should be clean No. 1 hard, is then put into one of the new pattern "Press Drills" with four horses; in fact, I work everything with four or eight horses. The drill is set to sow one bushel to the acre, or if it is very early, three and one-half pecks, or even three pecks will do; but if it is two weeks later than the usual seed time the larger amount is preferable. I have used the broadcast seeder for eight years and have seeded one and one-half bushels to the acre, but I find better results with the press drill and one-third less seed; indeed, it is much better than broadcasting. The advantage over the old drill, which was a complete failure, is apparent. The narrow wheels, one and one-fourth inches wide, of the press drill, follow each foot and press the ground solidly all around the grain, leaving the wheat fixed in the ground down near to the moisture.

The harvesting is done in the James River valley largely with headers which, with ten horses and seven men, cut and stack thirty to forty acres per day, threshing the grain and delivering it to the elevator. These are scattered along at an average of about one every six miles on our lines of railways. This work costs on the average ten cents a bushel. The total cost of raising wheat by the usual method, taking the new machinery, and not including interest on cost of land or profit on men, is stated below; the tables show the cost to the farmer who can run eight horses, which is the most economical method:

COST OF RAISING AND HARVESTING ONE HUNDRED ACRES.

Plowing with two teams 10 days at $4.00	$ 40.00
Dragging three times, 60 to 75 acres per day, at $3.00	15.00
Seeding with Press Drill, 20 acres per day, at $2,00	10.00
Seed at an average of $1.00 per acre	100.00
Cutting and stacking with header	60.00
Threshing and delivering to elevator an average of 20 bushels per acre.	200.00
Allowance for wear and tear of teams and machinery	40.00
Total cost for 100 acres	$465.00

This is at the rate of $4.65 per acre. The same work will be done by contract for $600, or $6 per acre.

A quite peculiar thing about raising "No. 1 hard" is the deep frost of the Northwestern region. This comes out of the ground very slowly, and during the long hours of sunshine in the summer gives an impetus to rapid growth by keeping the roots constantly moist. This year may prove an exception in this respect, for at this writing (Jan. 12) there has been no cold weather, and farmers are harrowing, and in some instances seeding.

EARLY POTATOES.

DR. GEORGE THURBER.

Where there is a near market, early potatoes are often a very profitable crop, and a few days' difference in earliness often has a marked effect on the returns, and it is worth while to take measures to forward the crop. The Island of Jersey, so celebrated for its breed of cattle, supplies London with a large share of its early potatoes. The farmers begin to prepare the seed potatoes when the crop is dug. They prepare racks in sufficient number to hold the required quantity of seed. These racks consist of a shallow box or "flat," such as our florists use for starting seeds in a greenhouse or hot-bed. They are made by cutting a soap, starch or other "store box" in three parts and furnishing each with a bottom. Whoever has a garden will find a number of these very useful. Such a box is the foundation of the Jersey potato rack, a post of inch stuff is fastened in each corner, upright, and these are connected by their upper ends by four strips of similar stuff. As the potatoes are dug those intended for seed are selected. Tubers of medium size and uniform shape are chosen. These are set in the box portion of the rack, "seed end" up, and as close together as they can be placed. These racks thus filled are placed in any convenient place in the open air, where they will get as much sun as possible. In due time these potatoes will become as green as those we sometimes see that have been exposed while still growing. Before there is danger of frost these racks of seed potatoes are placed under cover; they are stacked one above another in a well lighted room. As the planting time approaches, the racks are removed to a warm room, or there is provision for heating the room where they were stored. This is to cause sprouts to start—not long weak shoots, such as are formed in a dark cellar, but stout, stubby sprouts, green, and nearly as thick as one's thumb. There are but few of such sprouts formed on each potato; the one that gets the start keeps it, while the other buds (for such the eyes really are) remain dormant. At planting time these racks are taken to the field and the potatoes set in the rows, with the sprout or sprouts upward. Great care is observed in handling the seed potatoes, as the sprouts break off very easily, and the start thus gained is lost. You will ask if it pays to be at this trouble and expense. Undoubtedly, else a whole farming community would not do so year after year.

Another method is followed in some parts of Ireland. A frame is made like those we make with boards, but of tough sods, with a slope toward the sun, on a spot where the soil is good. The soil within is spaded up. The frame is filled with leaves, and during the winter the "sashes" are prepared, not with glass, but with fine brush. A rude frame is made of cheap lumber of the proper size to fit the sod frame, brush is laid on evenly and is held in place by nailing similar strips over it. In the spring the leaves are removed from the frame, the soil within is exposed to the sun during the day, and these "sashes" are placed over it early in the afternoon. By continuing this for several days, exposing the soil to the sun and covering it before it begins to cool, the soil within the frame will become appreciably warmer than that outside. The seed potatoes are placed close together in this frame and slightly covered with soil, and the covering and uncovering carefully attended to; keeping the "sashes" on during a storm or cold spell. Treated in this manner the seed potatoes will get a good start, and experience has taught the farmers to time the operation so that the seed may be ready when it is safe to transfer it to the open ground.

Our farmers may forward the seed for their crops of early potatoes and gain several days. We usually cut the tubers in March, sprinkling the cut surfaces freely with gypsum (land plaster) to dry them and prevent their sticking together. The pieces are then laid in the "flats" first mentioned, or other shallow boxes. They are placed close together, skin sides up and exposed to the sunlight of the kitchen window. The eyes will form strong sprouts which at the proper season may be planted. If the first shoots that appear above ground are cut by the frost, other shoots will appear from the dormant buds, and the labor will not be all lost. Of course this

forwarding process is advised for those only who wish to be early with a part of their crop, and who can try a part of their early kinds to see if it will pay. A still further help is to nail two boards together after the manner of a trough; place these by the side of the rows, and if a frost seems probable, or even a cool night, it is but the work of a minute to turn them over the rows; indeed it would be well to cover the rows every night until the potatoes outgrow their protection.

HOME-MADE OR HOME-MIXED FERTILIZERS.

The old way of making fertilizers at home by trying to dissolve whole bone with sulphuric acid or oil of vitriol has destroyed the clothes of many who have tried it, and in not a few instances the burning acid has done serious injury to the person who has attempted to use it. The practice is not commendable. Either sell the bone, get it ground fine, or burn it and save the ashes, which will contain all the phosphoric acid and lime, but none of the three to five per cent of nitrogen which good bone contains. The home-mixing of fertilizers is quite another matter. It is simply the mixing of agricultural chemicals that are purchased in a form ready for use and require no treatment with acid, but are mixed as thoroughly as the work can be done by hand, with shovel, rake and screen. This way of making fertilizers is practiced mainly by a limited number of farmers in New Jersey and Connecticut, and other sections convenient to the large markets from which the chemicals can be readily obtained without too much expense for freight.

Ten such home-mixtures were analyzed at the Connecticut Agricultural Experiment Station the past season. Mixtures Nos. 2, 4 and 10 were made specially for potatoes. No. 3 was prepared for corn, but all the others were made for use on a variety of crops.

THE FORMULAS BY WHICH THESE MIXTURES WERE MADE.

	No. 1 Lbs.	No. 2 Lbs.	No. 3 Lbs.	No. 4 Lbs.	No. 5 Lbs.	Nos. 6 & 8 Lbs.	No. 7 Lbs.	No. 9 Lbs.	No. 10 Lbs.
Nitrate of soda	100	.....	.....	.....	.....	.....	.....	.....	.....
Sulphate of ammonia	100	.....	300	200	1,000	166	166	100	200
New York tankage	640	.....	250	250	5,000	667	500	260	600
Dissolved bone-black	700	400	250	250	5,000	833	833	710	600
Sulphate of potash	360	400	.....	275	1,100	.....	.....	.....	600
Muriate of potash	100	.....	400	275	1,500	334	334	330	
Acid phosphate	.....	400	.....	.....	.....	.....	.....	.....	
Castor pomace	.....	600	.....	.....	.....	.....	.....	.....	
Dry ground fish	.....	200	.....	.....	.....	.....	.....	.....	
Bone meal	.....	.....	1,000	1,000	4,800	.....	167	600	Plaster 300 lbs.
Total weight,	2,000	2,000	2,200	2,250	18,400	2,000	2,000	2,000	2,300

Each mixture was carefully analyzed. The composition of the various ingredients was also ascertained, and the per cent of nitrogen, phosphoric acid and potash that the mixture should contain was calculated therefrom. The actual composition of the mixtures, as found by analysis, is shown below, compared with the calculated amount of each ingredient. In general, the agreement of the calculated and actual composition is fair, showing the mixing to have been thoroughly done, but some wide variations will be observed.

THE CHEMICAL COMPOSITION OF THE MIXTURES.

No. of Mixture.	For what purpose the Mixture was used.	Nitrogen.				Phosphoric Acid.					Potash.		Valuation per Ton.	Cost of Chemicals [unmixed].
		As Ammonia.	Organic.	Total. Found.	Total. Calc'd.	Soluble.	Reverted.	Insoluble.	Total. Found.	Total. Calculated.	Found.	Calculated.		
*1	General use.	1.75	1.73	3.48	3.7	6.15	3.85	2.24	12.24	11.4	7.65	7.6	$36.20	$35.57
2	Potatoes	.....	2.85	2.85	2.7	5.54	1.47	1.21	8.22	7.4	4.92	4.5	26.53	28.00
3	Corn	2.41	3.08	5.49	5.5	1.82	6.12	5.32	13.26	12 0	8.06	9.5	40.73	37.38
4	Potatoes	1.76	2.42	4.18	4.5	1.73	6.07	4.13	11.95	11 3	13.40	12.7	41.22	38.49
5	All crops	1.33	3.45	4.78	4.4	3 44	4.10	2.92	10.46	11.3	8.49	7.3	37.12	34.22
6	General use.	1.72	3.06	4.78	4.3	5.96	2.14	.88	8.98	9.0	9.00	9.2	37.04	33.41
7	" "	1.76	2.47	4.23	4.2	5.96	3.03	1.75	10.74	10.6	8.71	9.2	36.84	33.41
8	" "	1.76	2.94	4.70	4.6	6.39	1.51	.45	8.35	9.1	8.93	8.9	36.21	33.41
9	" "	1.03	2.51	3.54	3.5	5.58	5.33	2.44	13.35	13.6	8.58	8.8	37.55	32.51
10	Potatoes	1.65	1.42	3.07	...	4.74	2.35	1.87	8.96	.....	6.16	....	29.27	.....

*In this mixture, 0.71 per cent of the nitrogen is present as nitrates.

The conclusions derived from these samples and analyses are thus summarized by Dr. Jenkins: "*First.* These home mixtures compare favorably in composition with the best commercial fertilizers. In all cases but one the valuation is higher than the average valuation of factory-made superphosphates or specials analyzed last year. *Second.* The home mixtures are not as finely ground as the best factory-made fertilizers, yet their mechanical condition is satisfactory. *Third.* In only one case does cost of materials exceed valuation. If we add three dollars per ton for cost of mixing, the valuation and the cost will be about the same. The cost of factory-made fertilizers usually exceeds valuation by twenty to twenty-five per cent." A thorough understanding should always be had between the buyers and sellers of agricultural chemicals as to their quality, for which purpose a form like the following will be serviceable:

Wanted: To buy the materials to make ..... tons or more of fertilizer. The materials to consist of nitrate of soda, sulphate of ammonia, acid phosphate, dissolved bone, fine-ground bone, fine-ground fish scrap, muriate of potash, and sulphate of potash. All materials to be in good mechanical condition; in good bags; to run even weights or be plainly marked what each bag contains *net*, and to be delivered at ..... early in March next. All materials to be guaranteed to contain certain percentages of nitrogen, potash, or available phosphoric acid, as the case may be; one-half of the bill to be paid within ten days after receipt of goods; on the other half a credit of sixty days to be allowed, within which time samples will be sent to the State Experiment Station for analysis, and if there found to contain as large percentages as guaranteed the balance of bill will be paid within the sixty days, but if any are found to contain a *less* percentage than guaranteed, then a discount is to be allowed on the bill equal to the loss in money value caused by such deficiency for the first one per cent or fraction thereof, and *twice* the loss in money value for all deficiencies in excess of one per cent, and balance of bill within the sixty days. The samples are to be taken by a station agent or other disinterested party.

Early Squashes and Potatoes Together.—I have never grown these vegetables together, and see no advantage in so doing, unless it be the possible protection the potato vines might give the squash as a decoy to the squash bug and spotted beetle. The soil should be prepared for the potatoes as early as possible, the rows marked out three feet apart, and only the alternate rows planted, leaving the others for the squash. This would give squash vines six feet one way, and they could be planted three feet apart in the row, for the bush varieties. Well rotted manure of the best quality should be applied in the hills for the squashes before or at the time the potatoes were planted, the squash hills to remain until the conditions of soil and weather were right for planting the seed, which probably would not be until the potatoes were up. By the time the squash had sprouted, the potatoes would have a good start, and would protect the squash plants from hard winds. The frequent cultivation given the potatoes would hasten the growth of the squash and interfere wonderfully with the ravages of the squash bug, as he is shy and runs away at the first alarm. Precaution should be taken against the flea beetle by dusting the young vines in the top of each hill of squashes with gypsum or land plaster, into each bushel of which a pint of turpentine has been thoroughly stirred; then allow it to stand a few days well covered to retain all the fumes. This acts as a preventive, not as a remedy, and can also be used on the cabbage and all plants liable to infection from the flea beetle. To subdue the enemies of the squash crop is the most expensive and laborious part of its culture. The potatoes would be dug before the squash vines were done growing, or before the squashes were picked. T. F. BAKER, New Jersey.

The Values of Feeding Stuffs.—Taking the average results of many pig-feeding trials at the Wisconsin experiment station, as reported on Page 566 of the AMERICAN AGRICULTURIST for December, I find that at the present prices of grain in Iowa it will take $2.25 worth of rye meal to produce 100 pounds of pork, while of meal and shorts it will take $2.80 worth, corn meal alone $2.82 to $3.53, shorts and bran $3.45, shorts alone $3.94, and barley $7.09 worth. I believe rye meal is not appreciated as it should be. Rye can be sown in the corn stalks in July, or at any time before November, and yields from 18 to 40 bushels per acre. The price is nearly always fifty cents per bushel, and it is well worth that for pig feed. It comes the earliest of any grain, and is highly relished by hogs, when soaked in water or ground into meal. The growing plant furnishes a large amount of green food in fall or spring. Oil meal contains three times as much albuminoids or lean meat and muscle-forming ingredients as corn meal, and the addition of a little oil meal to corn will make a better balanced food than either alone. It appears, from the Wisconsin results referred to, that corn meal and milk together make the cheapest food, at present prices. But rye meal soaked with water comes next in summer, then corn meal and shorts. Our best farmers should make at least ten pounds of pork for every fifty-six pounds of shelled corn fed, and more than that if the pigs are in a clover pasture. Much feed is wasted on scrub stock. A well bred and well fed pig at seven months would weigh 225 to 250 pounds, and will pay a good profit for the food it has consumed.

A. H. SHELDON, Iowa.

NEW VARIETIES OF ANNUAL PHLOXES.

About the only annual species of Phlox in cultivation is Drummond's (*Phlox Drummondii*), it being not only the best of the few annual species, but one of the best annual flowers in cultivation. This was sent by the distinguished collector Drummond to the Botanical Gardens, Manchester, Eng., where is was recognized as new by Doctor (afterward Sir) William Hooker, who gave it the name of its discoverer in 1835. It was the writer's fortune to reside near the city of San Antonio, Tex., for several months one

FIG. 1. DRUMMOND'S FIMBRIATED PHLOX.

spring where this and many others of Drummond's prizes grew in the greatest profusion. It has seemed to be the character of many other plants of that country to occupy the prairies to the exclusion of almost everything else, forming examples of natural bedding or massing of great beauty for acres, perhaps even for square miles in extent, and presenting a floral display that one could hardly think possible without seeing it. In its wild state the plant is about a foot high, the foliage and lower part of the flower hairy. The flowers are crowded in flat-topped clusters, and about an inch across. The general color of the flowers is a bright rose crimson, ranging even in the wild state to white on the one hand and a fine purple on the other. This Phlox is notable among the annuals for the varieties it has produced in cultivation, not only in color, but in its double flowers of different kinds. Indeed, it would be unusual of late years if a season should pass without one or more novelties being added to the catalogues, especially by the seed growers of

FIG. 2. DRUMMOND'S PHLOX STAR OF QUEDLINBURG.

Germany. Our engravings show the latest triumphs in this direction. Fig. 1 represents *Phlox Drummondii fimbriata*, the principal characteristic of which consists in its fimbriated, partly three-toothed petals. *Phlox Drummondii cuspidata* differs from all other varieties heretofore known, in that the pointed center teeth of its petals are five to six times as long as the lateral ones, giving the flowers a peculiar starlike appearance. The colors of both varieties range from pure white to rose, scarlet, violet, purple and blue.

BAG WORMS AND HOW TO DESTROY THEM.

One of the most troublesome and destructive insects which attack the leaves of trees is the Bag worm or Basket worm (*Thyridopteryx ephemeræformis*, Haworth). Its larvæ overrun and prey on a great variety of fruit and shade trees, both deciduous and evergreen. The perfect insect is a moth, the male having filmy wings, which give it the appearance of a large wasp rather than a moth, as it flutters around on warm summer days. The female is wingless and legless, and when she has deposited her eggs in the bag-like case she falls to the ground and dies. Late in the following spring these eggs hatch out into small brown larvæ which feed on the foliage of the tree to which they attach themselves. They begin to build for themselves silken coverings, to the outside of which they fasten pieces of the leaves upon which they feed. In time each of these silk-lined coverings becomes a bag, suspended from the lower side of the limb or twig. When they have attained nearly their full growth, these larvæ have an unpleasant habit of spinning down upon any person who is under the tree. Having spent the sunny hours of June and July in stripping the leaves from the trees and rendering themselves generally disagreeable, the larvæ fasten their pendent homes securely to the twigs, and change to the pupa form. After a brief period they burst forth from their pupal inclosures,

CLEANING OUT BAG WORMS.

the male to flutter his brief hour in the waning sunshine, the female to lay her eggs inside the empty bag and die.

The most effective method of clearing out this pest is shown in the accompanying illustration. Throughout the winter the bags are plainly seen hanging from the twigs, and are readily removed by means of a fine wire brush at the end of a pole of the proper length to reach them, by a man standing beneath the tree. The bags having been brushed off are gathered up and burned. A very little labor will clear an orchard or row of shade trees.

Fertilizers Sold on Analysis.—Our American fertilizer manufacturers are compelled by law to guarantee the quality of their goods, being liable to a fine if their fertilizers are below the minimum quantity in the principal ingredients guaranteed to be present. The fertilizer manufactory which makes the manures originated by Sir J. B. Lawes, the celebrated Rothamsted experimenter, accomplishes the same end in this way: The sample is fairly drawn from the bulk in the presence of the company's agent and sent for analysis to certain reputable chemists before the manure is used. Should any discrepancies appear in the analysis, the variation in the ingredients is valued, and should any diminution of the value of the whole be ascertained, a deduction is made to the full extent adjudged by the analyst. The cost of analysis is paid by the buyer when found in favor of the manure; otherwise, by the sellers.

THE NEW PRIMROSE.

So many novelties have been overpraised that it is a pleasure to speak of one which completely "fills the bill." Such is the case with the *Primula obconica;* among the seventy odd primroses now known there is none choicer. It comes from Northern China, where it was discovered by M. Maires, one of the collectors for the nurseries of the Messrs. Veitch, and it first bloomed on their grounds in September, 1880. It has spread with great rapidity. In this country seeds are already offered that were harvested here, and we know of one large house, and hear of others, that are filled with this primrose, for furnishing cut-flowers, or for supplying seeds. Our knowledge of this primrose is from a half dozen sent us, early last spring, by a European correspondent. When they arrived the plants looked as though a great deal of coddling would be required to save them; so they were each potted in a good-sized pot and placed in the greenhouse. Coddling! One never saw plants show that they were less in need of it. They at once started in full growth, and went on with such vigor that in selecting a specimen for making our illustration it was difficult to get one sufficiently compact. Those who know the old *Primula cortusoides* of our gardens, afterward shown to be *P. Sieboldii*, will see from the engraving the resemblance to that old plant. As the illustration shows, one plant produces an abundance of robust foliage, of a pleasing form and vigor; the numerous flower stems are a foot or more high and bear the flowers in umbels, like clusters at the top, or in some plants in whorls. The flowers, of the shape seen in the engraving, are about an inch across. They are described as pale lavender in color; ours are best described as white, flushed with pale lilac, We know of a plant, the flowers of which are of a well-marked lavender, from which much is expected. This plant possesses every element of popularity (including fragrance), except hardiness in winter. It also offers to the florist a most promising subject for improvement, and the producing of new varieties. It is not often that we can give full assent to all that has been said of a new plant, but here is one which can hardly be overpraised.

PRIMULA OBCONICA.

For the Good of the Colts.—Give the mare a daily feed of bran. Treat her with the greatest gentleness and kindness. If it has never yet been done, give her a few slices of apple from the hand, and make her approach you for them. The coming colt will inherit this disposition and can be made as friendly and confiding as the dam before it is a week old, and it will never forget your kindness unless it is badly treated afterward. In thirty years of farm work and horse keeping the writer has never owned or used a whip, nor has he permitted a hired man to use one, and every horse, cow, bull, or sheep, and even mule, he has reared has been a petted one and would come to his hand freely. Kindness is a good crop to sow in the farm-yard, for it yields in profit an hundred fold.

RAISING ONION SETS.

Onion "sets" are small onions that are planted in the fall or spring for the purpose of producing green onions for pulling early in the spring, or for growing a crop of large onions. For the latter purpose, especially, it is desirable, indeed essential, that the sets be quite small, not more than half an inch in diameter. If the sets are too large, instead of forming large bulbs they will run up to seed. For furnishing green onions for pulling in spring some gardeners prefer good sized sets, as they make a stronger and earlier growth. There is a general impression that the seed for onion sets should be sown late and on poor land. On the contrary, the seed cannot be sown too early in spring or on too rich land. The real point is to sow very thick, say twenty seeds to each inch of row. One practical difficulty in sowing so thick is to get the seeds to germinate. As every farmer knows, before a seed can germinate it must absorb considerable water, or, as we say, "swell." It absorbs this water from the soil in immediate contact with the seed. But when you have a large number of seeds in a small place only those in direct contact with the soil will get moisture. The others will remain dry and hard, and sometimes "burn." There are two remedies for this difficulty. Either sow very early in the spring when the ground is moist, and when we are likely to have an abundance of rain, or soak the seed two or three days before sowing. We say two or three days, but by this we do not mean that the seed should remain in the water unchanged for that length of time. Soak the seed for twelve hours, and then throw it on to a sieve or cloth and let the water drain off. Keep the seed in a moist state in a warm room four to five hours and then soak it again in fresh water another twelve hours, and keep repeating this till you are ready to sow. After such treatment for two or three days, if the weather will not permit sowing, put the seed in a cold room and no harm will be done. We have kept the seed moist till it commenced to sprout, without harm. In fact, we never had better sets than from this sprouted seed. We repeat that early spring, rich land, thick seeding and clean culture are the great secrets of success.

Subsoiling vs. Trenching.—Trench plowing with the misunderstanding that it was subsoiling is responsible for much of the prejudice against the latter among farmers. Bringing large quantities of the subsoil to the surface is rarely profitable in farming, while occasional stirrings of the subsoil are rarely unprofitable.

Children's Compositions.

JAMES VILAS BLAKE.

It does seem sometimes as if those who give out subjects for children's compositions exercise a kind of impish ingenuity in choosing those exactly on which no child should write—nor man either, for that matter, unless he write a whole book or treatise. What can be more absurd than to require a child to write on a general subject like Education, Obedience, Truth-telling, Good Manners, Kindness, and a hundred similar excellent moral subjects? One thing is certain—no teacher who does that ever tested the method on himself. A friend once told me of a vivacious, intelligent old negro in Boston who had been a slave. The colored brother invited my friend to supper, and my friend duly went, being a lover of all mankind. He found the good man's home a very poor affair, and the supper little else than hoe-cake on a bare board. My friend partook of the fare with rising admiration—I mean for the hospitality; he spoke not of the quality of the hoe-cake. He said to the negro, "Did you fare as well as this when you were a slave in the South?" "A heap better," said the good man. "What! A better cabin to live in?" "A heap better." "And better things to eat?" "Better, and more of them." "Well, then," urged my friend, "don't you think that after all you were better off down there in slavery?" "Go down and try it yourself," said the negro sententiously. Now when a teacher tells a child to write a composition on Kindness, I would like to whip him over the shoulders with the admonition, "Go and try it yourself." The more general the subject is, the harder it is to make a particular thing of it. In other words, the more a subject has in it, the less any one will find to say about it. This may seem, at first sight, a paradox. But it will be plain enough if any one will consider that with a large, general subject, the first necessary step is to cut it up into small parts or divisions. The general subject is treated only by the successive treatment of each small particular or division. Therefore the child can do nothing else. But this analytical process of division and subdivision is exactly what the child's mind has not arrived at. Therefore, what can he do but string together a few platitudes, the sole use of which is to plague the teacher into giving out better subjects, if, indeed, he be not dull past all cure by plaguing.

The progress of the child toward the power of mental analysis must be by exercise in analysis by the senses; that is to say, by the habit of minute observation. If he have acquired the power and habit of observing objects in their parts, he will begin then to contemplate complex ideas in their divisions. Therefore for an exercise in composition, give the child simply an object to describe. This applies not merely to the very young, the beginners; it will be a good regimen for children up to sixteen or seventeen years of age. Let them not choose their own objects, because then they will waste a great deal of time in settling on one. Let the teacher place an object before the class and say, "Now write for me a composition describing this object. Tell all its parts, its shape and its color in such a way that if I had not the object here I should know it or be able to imagine it by your description." Or, better still, the teacher might set up two or three objects somewhat similar from which each pupil might choose one, and then the teacher should require such a description as will enable him to identify the choice readily. In reviewing and criticising the compositions only a small share of attention should be given to the language. Precise words will come with precise ideas. The point to insist on should be minute and accurate description, a recognizable picture in words.

Galton has written interestingly of what he calls the faculty of "visualizing." He means the power to look at an object attentively and then, by means of a nice observation of it, to carry away so distinct an image of it in the mind as to be able to project it in space or on a surface at will. For example, a man is able to visualize distinctly and to the full extent of the faculty who can look at the outline of an object and then, when it is withdrawn from his eye, and even after some interval, look down at a blank sheet of paper, summon the object before him, on the paper, as much as if it lay there, and so draw the outline of it as distinctly and easily as if he were tracing it round the object. This faculty Galton places very high among mental capacities. He says, if I remember aright, that about one man in sixteen is well endowed with it by nature, that about five or six can hardly be taught it by any exercise or training, and that the remaining nine or ten can be brought to a good degree of the power by training and practice. The first step in this valuable attainment is the training of the power of direct and minute observation. This power would be greatly stimulated and expanded by such an exercise as I have mentioned above—by setting an object before a child with the requirement to make a minute description of it, part by part, and including all its visible qualities. If the composition were judged and graded by the completeness of the observation manifested,—that is to say, by the number of the visible qualities observed and recorded,—the progress of the child could not but be rapid in this art of observation. And what mental art or quality is more valuable?

After the child had been trained for a while in this way, a new and interesting step could be taken by setting an object before the children's eyes for them to study mentally. They should not be allowed to make written notes of it on the spot. They should be required simply to observe it and make mental notes of its different qualities and visible properties. Then the pupils should be required to write a description of the object from memory, and the compositions should be judged and marked, as before, by the completeness of description attained; that is to say, by the number of visible qualities enumerated. It is difficult to overstate the value of such an exercise.

Spreading Contagious Diseases.

CLARISSA POTTER.

We have outlived the time when every child, as an unavoidable matter, was expected to have—and live or die as its vitality proved—the contagious diseases, measles, mumps, whooping cough, chicken pox and scarlet fever. One who lived seventy years ago tells me that she, as well as the other mothers of her country neighborhood, believed that every one of their large family of little children must sometime have each of these disorders. To escape them by strict isolation, which for any family in that scantily populated community could easily have been done, did not enter their thoughts, and to get through the "necessary" ordeals as soon as possible they often deliberately sent their children into homes where one of these contagious diseases was known to be raging, and then made ready their big floor bed in the living-room, their ointments and poultices of strange ingredients and their pots of brewing herb teas.

We now know that the longer our little folks can escape these contagious diseases (with the exception, possibly, of measles) the less liable, after the fifth year, they are to contract them, while every added year diminishes the severity and danger with which they may be expected. The old-time custom of sending out little, defenseless children to "catch" some prevailing, contagious disorder, has become obsolete in enlightened districts, and wisely so, for in how many old bramble-grown burying lots on our green hill-sides are little graves in which have slept for more than half a century the poor, helpless little babies whose heads actually quartered with the convulsive spasms of whooping cough before they gave up their desperate struggle for life, or who fell unwilling victims of scarlet fever, brought to them in their mother's clothing, whose mistaken duty had led her to act as nurse in some household stricken with the terrible disease. But there are families who have had the benefit both of observation and the advanced ideas of those who have made careful, honest study of these truths, yet are so bigoted in their beliefs that they will not admit that typhoid fever or diphtheria is infectious. They uphold scarlatina, whooping cough, etc., as necessary evils, and the earlier children compass them the better—seemingly anxious to do their part to introduce and spread disease among our children. From such bigots, who are "never afraid to go among any diseases," and just as brave about coming with uncleansed garments into your home and mine, we have greatest danger of pestilential disease entering our households, and from which there seems to be no protection or redress, for little good is it to appeal to health officers after such a pestilence has once secured a foot-hold in our home. There is a crying need for a better understanding of the fundamental principles of sanitary science in city as well as country, and how best to supply this deserves the careful attention of those who have made a study of the subject.

"Giving Thanks Always in All Things."

PALMETTA GOLDSMITH.

One of the most beautiful sermons to which I have ever listened, had for its subject the above text. Rhetorically, it was a gem, and its application to our spiritual life was perfect. I carried the good seed home in my heart, and then, as I have a a fashion of doing, made a practical application of the command, thinking how lovely life would be if husbands and wives, brothers and sisters, parents and children should remember in their intercourse with each other to give thanks. I think,—saying it with all hesitation, because I am a woman,—that men most often err in this matter. How many husbands do you know who ever thank their wives for the thousand daily acts of kindness which they perform? If the buttons are always in order, the socks always darned, rips and tears mended, dinners dainty, silver bright, and floors kept clean, how many husbands reflect that a word of praise or thanks would only be the just meed of the uncomplaining little wife who toils so unceasingly for his comfort? Men who would willingly give their wives velvets and diamonds if they could afford it, never think of these little words of love and appreciation which they could so easily bestow, and which would have more power than anything money could buy to gladden the heart and brighten the eyes of the woman they promised to love and cherish. In business you thank the man who buys your goods, and pays you your money, and the man of whom you buy a satisfactory article, but are you as thoughtful toward the wife who has just mended and cleaned your coat?

I was calling one day on a delicate lady friend who, after a hard day's toil at the work, had just finished the repairing and cleaning of a heavy overcoat of her husband. A tailor would undoubtedly have charged several dollars for the job, and it was with evident pride in her task that she handed it to her husband, pointing out how smooth the new sleeve linings were, how nice the newly worked button-holes, and so on. Surely, thought I, he will at least kiss the hand that has done this work, and his words of grateful thanks will pay for all her toil. But no, this man whom I have heard greet a neighbor's kindness with a hearty "Thank you," for his wife had only an indifferent nod, and a "Humph, yes, very good; lay it down."

People are only grown-up children, and it is astonishing how many of the traits of childhood we retain after we have reached years of discretion. We all know that most children can be more easily managed by praise than by fault-finding, and it is just so in a measure with the grown-ups. If your husband happens to remember to wipe his boots, and so forbear soiling your freshly-scrubbed kitchen floor, don't say to yourself that it is no more than he ought to do; give him a gentle word of thanks and a kiss, and you may be sure that it will be a better aid to his memory than a reproof if he forgets. Try the same plan in regard to firewood. Don't fret when he forgets to cut any, but be especially sure to thank him when he does provide a good supply. It will be far more effective than any amount of nagging, or than telling him that Mr. Brown never forgets to cut firewood for his wife.

This giving thanks always in all things is a habit that will require cultivation, but once acquired it will prove an ever blooming shrub that will entirely crowd out the weed of ill-temper. There are no conditions in life that furnish as much opportunity for the cultivation of this virtue as that of the farmer's family. They are all so dependent upon each other for comfort, enjoyment and happiness. There arise so many occasions where husband and wife can be particularly helpful to each other, and we are all human enough to like to have our best efforts recognized. If your wife does the evening milking because you are late in coming home from work, nothing will rest her tired and aching back and limbs as much as your arm about her waist, and the few words which you will whis-

per in her ear—just such words as you used to find it so easy to say when you were courting her. Try my plan, and see if in making another heart happy you do not increase your own happiness.

Inexpensive Ornamental Table.

The frame of the table illustrated herewith is made of pine or whitewood. It is 28 inches high and the top measures 18½ inches in diameter. The three legs, which consist of plain, round sticks, are smoothly covered with olive colored felt, are then joined together in the middle and decorated with a small scarf of the same material, trimmed with ball fringe on one of its length and one of its width sides, as seen in Fig. 1. The top is covered with the same felt after it has been embroidered in the following manner. Work the designs given in Fig. 2 and Fig. 3 on ordinary embroidery

FIG. 1. ORNAMENTAL TABLE.

canvas with filoselle silk in cross-stitch, except the two outside rows of stitches around the figures. Then cut off the canvas, allowing for these two stitches around; very lightly moisten the backs of these figures with mucilage, and arrange them on the felt according to Fig. 1. Baste them on, then finish the outside rows after the pattern, stitching through canvas and felt, thus fastening them securely to the felt and giving the appearance as if they were solidly worked across it. Then stretch the cover over the table and finish it with ball fringe tacked on with gilt headed tacks.

The different marks in the patterns denote the shading, the explanation of which is as follows: For Fig. 2, Butterfly and Bird, the solid black squares indicate black; black squares with white

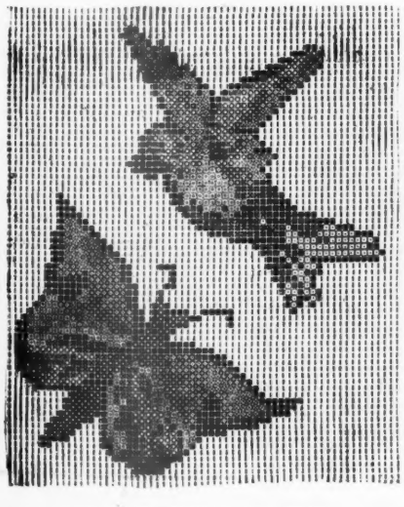


FIG. 2. BUTTERFLY AND BIRD.

star in center, dark bronze brown. The white squares with fine lines indicate medium bronze brown. The white squares with diamond-shaped center, light bronze brown. The black squares with white square and dot in center, dark red. Black squares with white diamond and dot, medium red. The white squares with two light diagonal lines

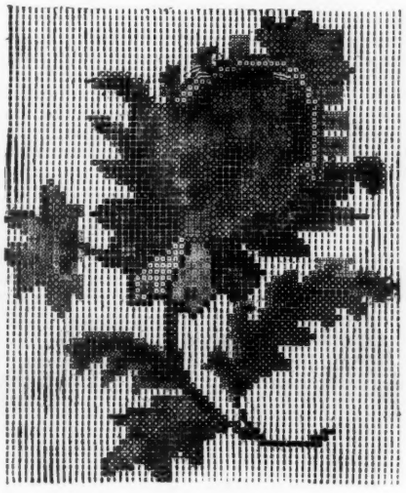


FIG. 3. PATTERN FOR ROSE BUD.

crossing each other, lightest red. The white squares with two heavy diagonal lines crossing each other, dark blue. The white squares with ring, light blue. The black squares with five white dots, forming a standing cross, green. White squares with black dots, gray.

Shading for Fig. 3: The solid black squares here denote dark bronze brown. The black squares with white star, medium bronze brown. The white squares with two straight lines crossing on other, light bronze brown. The black squares with white square and dot in center, dark red. The black squares with white diamond and dot in center, medium red. The white squares with light cross bars, light red. The white squares with black dot, gray. The black squares with five white dots forming a standing cross, green. The white squares with black cross, dark blue. The white squares with black ring, light blue. The white squares with Maltese cross, brick red. The white squares with fine lines, dark fawn color. The white squares with diamond shaped center, light fawn color.

Knitted Foot Cushion.

Germantown yarn or double zephyr may be employed in the construction of the foot cushion here shown, or silk or wool remnants cut and sewed as for a carpet are very nice. If the latter be chosen the pieces should be cut about an inch wide and may be sewed together at random, mixing in the bright colors in bits with the medium shades for the three wide stripes, and using only dark colors for the two narrow ones. Of course care should be taken to have all seams or roughness on the wrong side. Use small wood or bone needles and plain garter-stitch. Each stripe is about thirty inches in length when completed; the center stripe is three and a half inches wide, the two end stripes three, and the two dark ones two inches. Join the ends of each stripe invisibly, and sew them together in the order shown. For the end puffs use any serviceable goods that will correspond with the material of which the stripes are made; plush, velvet, and satin are all very pretty, but a nice piece of wool sateen is preferable for common wear as it is durable and does not easily catch or hold dust. For each puff take a piece of the goods a yard long and six inches wide, seam the ends together to form a circle, gather one edge and sew it around the edge of the knitted covering. Make a stout cotton case to match the covering in circumference and twenty-four inches in length; fill it with curled hair, pass a large fancy cord, a yard and a half long, through the middle from end to end. Gather up one end of the case closely and sew it around the cord twenty inches from its termination; gather the other end, fill in all the hair it will hold, draw the cord tightly, and sew the casing to it so as to leave out twenty inches of the cord as at the other end, thus confining the cushion in compact shape with full circling puffs at either end. Draw on the cover, tack it to the case where the puffs are sewed on, turn in and gather the outer edge of the puffs around the cord, and finish by knotting the cord in four or five loops at each end. Fasten the loops so securely that the cushion may be lifted and handled by them.

FOOT CUSHION.

Crocheted Book Bag.

Pretty book bags, always acceptable to school girls, may be manufactured so easily by one having the least bit of ingenuity that it seems unnecessary for any child to go without one, or be obliged to carry the plain homely canvas ones so often seen. Two balls of macrame cord and a remnant of fine French sateen are all that is required for the bag as illustrated; but, if desired, a much nicer one may be produced by using satin for the lining and placing a large, soft bow of broad satin ribbon carelessly on one side. First, an oblong piece of crochet work, twelve inches wide and twenty-two inches long when completed and bordered, is made in any easy stitch. As shown here the work begins in the middle of the piece—at the bottom of the bag—with a chain about eleven inches in length, on which are worked several rows of plain double crochet, then a row of shells, then plain again, and so on till one side is completed. The other is worked on the other side of the chain in the same way. A border of scallops like the shells is worked all around the edge, and straps fifteen inches long, that are also of plain crochet bordered by small scallops, are joined to it at each end for handles. It is stiffened with thick starch, spread out smoothly and dried, and afterward varnished with white or bronze shellac according to taste. The bag is then smoothly lined as far as the border with blue, yellow, or red sateen, bent in shape, and finished with a fan-plaiting of the sateen at each end, the top of which is turned down to form a ruffle, below which is a casing for an elastic band. If preferred the lining may be omitted and a wedge-shaped piece of crochet-work, folded lengthwise through the middle, inserted at each end, but the bag will not be as capacious, or as readily adjust itself to the demands made upon it as it would with the fan-plaiting and elastic. Of course much smaller ones may be made for little children, who, if they have only one little book to carry, are much comforted if they have something pretty to carry it in.

BOOK BAG.

Doilies.

One yard of fine linen, thirty-six inches wide, will cut forty-nine doilies, five inches square. Select close even linen of the kind used for sheeting, and one and a half yards wide, and see that it has no uneven threads. Have it washed in strong boiling hot suds, well rinsed, then boiled in clear water to remove the starch and render it pliable; rinse in clear, cold water, and put to dry without the addition of bluing. One feels that the decoration of these doilies may be quite elaborate, now that the Scotch linen flosses may be obtained so cheaply, and will bear washing so well. The colors of the linen flosses, instead of fading, are brought out more brightly by the iron. On these doilies put quarter inch hems which should be hemstitched.

Doilies are desirable adjuncts to every table service, both for fruit plates and finger bowls. They should be stamped, each with a different de-

sign, and daintily outlined with the linen flosses in colors, gold and white being a favorite combination; also pink and white, blue and white, and often they are decorated to match dinner sets. Table-cloths embroidered in the linen flosses in solid or half Kensington stitch, or outlined, are also very popular; and, with doilies, napkins, and center piece to match, form a service that any housekeeper may well display with pardonable pride. The designs for table linen should be selected with due regard for the decoration of the dinner service. A plain service of good white china is a boon to the housekeeper in these days of embroidered table linen, as the choice is then unlimited in design and color.

Decorated Towel Napkin.

A pretty and appropriate gift for an invalid friend, or for the mother of small children, is a set of decorated towel-napkins. They may be made very pleasing in appearance and of any material ever chosen for towels, napkins or bibs. Those accustomed to the care of the sick, whose food must be served by the bedside, know well how untrustworthy an ordinary napkin invariably is, always slipping out of place just at the wrong moment, leaving the garments exposed to spots and stains, and the weak, enfeebled wearer to confusion and dismay. The napkin here shown requires only to be buttoned on one shoulder, or in cases of extreme weakness the upper ends tucked over the shoulders will hold it in place. It is termed a towel-napkin because of its resemblance in shape to a towel, and because all sorts of fancy towels and toweling may be utilized in this way, but in this instance the resemblance is only in shape. It is made of a piece of fine linen momie cloth sixteen inches in width and twenty-two in length. A seven-inch slash is cut in the middle of one end; the opposite end is fringed to a depth of two inches; an inch and a half is turned under for hems on the sides and slashed end, and it is ready for decoration. A colored facing is applied each side of the slash, which is then turned back like a collar; a band of the same material is used for a border above the fringe, and for a narrow strap which is fastened at one side of the neck and buttoned at the other. The bosom embroidery may be of the same in applique work, or the pattern may be outlined and filled in with various stitches in colored floss. A row of feather-stitch in the same floss furnishes the hems and edges the border, and a row of white feather-stitch confines the collar in place and ornaments the band and strap. Scotch gingham, plain or hair-lined, in red, pink, or blue, or plain Turkey red, is suitable for the trimming. Less elaborate, but very neat and dainty, are the napkins trimmed with plain white linen applied with fine fancy stitches, worked with white floss. They are also quite pretty with a perfectly plain finish and no decoration but the collar and fringe. If bordered towels are chosen remove the border from one end, cut the slash, face it with the part removed and make the strap of the piece remaining; they are easily fashioned and very serviceable.

TOWEL NAPKIN.

Pure Air and Good Health.

To ventilate a room it is not necessary to make it cold, even in winter. A supply of fresh outside air may be kept up in the room without materially lowering the temperature. We have only to take advantage of a certain property of air—when it is heated it expands and rises, while cooler air takes its place. If we make openings in the room in or near the ceiling, the foul air will rise and pass out while the pure outside air will enter and sink to take its place. Because the current produced is a very gentle vertical one, it will take little heat from our bodies, especially as the outside air will become heated somewhat in its slow descent. Openings under doors and windows, or under baseboards, chill us, because the air they admit comes in as a cold, rapid, horizontal current, striking us directly; and air so admitted does not so well ventilate the room as air admitted from above. If no other provision for ventilation has been made, the windows can be let down a little from the top. A very narrow opening will suffice. Close the lower part of the room as tightly as may be, but have entrances and exits for the air above while the rooms are occupied. To sleep in an unventilated room is still more hurtful. If the windows are let down from the top there will be no danger of catching cold. It is currents striking directly which produce colds in the head, or throat, or chest. And it is sleeping or sitting in close, unventilated rooms which makes one susceptible to colds.

Design for a Pen-Wiper.

The two outside covers of the pen-wiper shown in the engraving are made of dark cloth, each two inches wide and four long, cut in the shape of a pen. Four thicknesses of chamois skin are cut to match, and fastened between the covers by a few invisible stitches at the point of the pen. The lettering is done in silk, and the name of the person to whom it is to be presented is added below.

A NOVEL PEN-WIPER.

Cat-Tail Card-Receiver and Camp-Kettle.

Tie together three nicely formed cat-tail stalks with a bow of broad ribbon. Bronze a large, coarse woven straw hat; the woven hat requires no lining, and is consequently much lighter than a braided one. Fasten the brim of the hat at three points, that is, to each cat-tail stalk; and a pretty card basket is the result, as seen in Fig. 1.

A gypsy camp-kettle may be represented by tying three strong cat-tail stalks together quite near the heads, thus forming a tripod. From the center, by means of a light brass chain, suspend a tiny Japanese tea-pot or a light kettle, as shown in Fig. 2. The effect will be quite pleasing in an otherwise vacant corner of the parlor. This can also be made to serve as a pretty table decoration for a five o'clock tea. But in this case the cat-tails must be quite small, nor should the stalks be more than two feet long. The kettle must be of crackled ware which will resist great heat. A small alcohol lamp, completely hidden by small pieces of wood, is placed under the kettle to keep the water boiling.

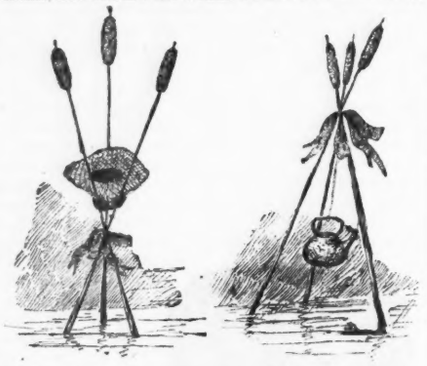


FIG. 1. CARD-RECEIVER. FIG. 2. CAMP-KETTLE.

The Door-Jug.

Fashions, in dress and etiquette, are accepted spasmodically. The same may be said concerning matters of home-furnishing and decoration. Some peculiar piece of bric-a-brac, once successfully introduced, forthwith becomes the rage. The door-jug, now in vogue, is the cause of such a spasm. It goes the rounds—everybody must decorate a door-jug. As the name signifies it is intended to stand beside the door. The jug for this purpose may vary in size, from half a gallon upward. It is first painted any desired color, and before being allowed to dry is sprinkled with metallic dust. If preferred, the entire surface may be gilded or bronzed and decorated with silver or copper. If the decorator has artistic skill with the brush it is effective to paint the jug black, varnish and then ornament with antique designs in copper and bronze, as seen in the illustration. Still another plan, which is more simple though not so pretty, is to paint, varnish and brighten by pasting on tasteful Decalcomanias. To the handle of a jug is tied a bow of ribbon, or a long sachet-bag. A very small jug,—ink-bottle-size,—similarly decorated, makes an excellent paper weight; filled with shot it also serves as pen cleaner. Fine shot is the best of pen-wipers, being neat, clean and convenient.

ORNAMENTAL DOOR-JUG.

Crocheted Boston Lace.

Materials: Real Scotch linen crochet thread, or Starlight Saxony. Steel needles for thread. Bone needles for yarn.

Cast on twenty-two stitches, knit across plain.

First row—Slip one, one plain, [make one, narrow] repeat what is between brackets three times, four plain, narrow, make one, two plain, narrow, make one, one plain, make one, knit three together.

Second row—Slip one, make one, three plain, make one, narrow, two plain, make one, narrow, eleven plain.

Third row—Slip one, nine plain, narrow, make one, two plain, narrow, make one, five plain, make one, one plain.

Fourth row—Slip one, make one, seven plain, make one, narrow, two plain, make one, narrow, nine plain.

Fifth row—Slip one, one plain [make one, narrow], repeat what is between brackets three times, narrow, make one, two plain, narrow, make one, nine plain, make one, one plain.

Sixth row—Narrow, make one, narrow, five plain, narrow, make one, two plain, narrow, make one, ten plain.

Seventh row—Slip one, ten plain, make one, narrow, two plain, make one, narrow, three plain, narrow, make one, narrow.

Eighth row—Narrow, make one, narrow, one plain, narrow, make one, two plain, narrow, make one, twelve plain.

Ninth row—Slip one, one plain [make one, narrow], repeat what is between brackets three times, five plain, make one, narrow, two plain, make one, knit three together, make one, narrow.

Tenth row—Narrow, make one, one plain, make one, two plain, narrow, make one, fourteen plain.

Eleventh row—Slip one, eleven plain, narrow, make one, two plain, narrow, make one, one plain, make one, knit three together.

Repeat from second row always, in this rule.

An Artistic Plaque.

A unique standing plaque illustrated herewith is made in the following manner: A piece of heavy pasteboard, nine inches long and six inches wide, is smoothly covered with velvet or plush, dark blue or ruby red being preferable. On the under side, two inches below the upper edge, securely glue a double strip of pasteboard, about three inches in width. This forms the support for the plaque. In the center of the velvet covered side, fasten a gilded horseshoe. It is rather prettier to leave the bent nails in the shoe, just as when found. Exercise individual taste with regard to the arrangement of a couple of clay pipes, one painted gilt the other silver; a gilded wish-bone; a cluster of four-

ARTISTIC PLAQUE.

leaved clover, irregularly painted with two colors, and a small acorn bearing twig, similarly decorated. An artistic grouping of these articles about the horseshoe results in a charming design, emblematical of good fortune, peace, fulfillment of wishes, success and hospitality enumerated in the order given in the description. Oats, symbolic of music, may be twined along the edge of the plaque or about the horseshoe. This is an appropriate wedding gift. True, it is of no "money" value, but no doubt will be more highly appreciated by some recipients than an expensive gift beyond the means of the giver, for it is expressive of all that which is most desirable for happiness and contentment in life.

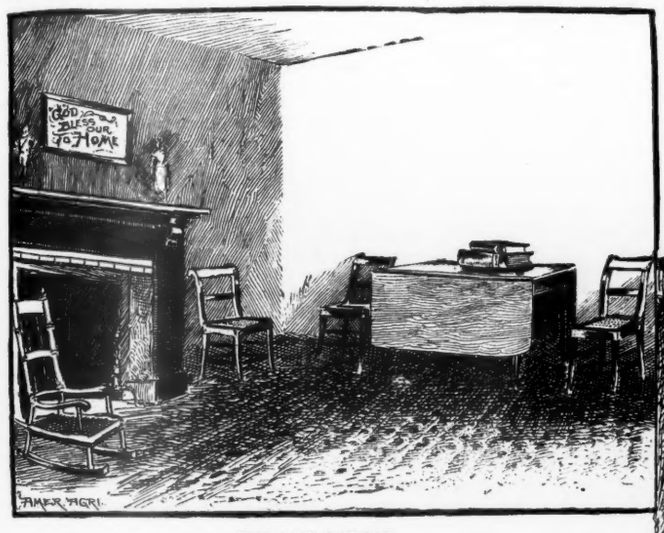
"The Prettiest Little Parlor."

ALICE CHITTENDEN.

Indeed it was

"The prettiest little parlor
That ever you did spy"

after Cicely Norton got through with it. Before that it was not a room that you would have gone into voluntarily with any expectation of pleasure or comfort. An ingrain carpet, whose once brilliant hues had been toned down by wear very threadbare, for it had been purchased in the days when ingrain carpets grew threadbare from long use instead of getting great holes in them after a year or so of service; neat and clean it always was, for Mrs. Norton prided herself upon being a "tidy housekeeper," but on the score of beauty it had nothing to recommend it. Six stiff, cane-seat, curled maple chairs, and a rocker; a mahogany table of the old-fashioned kind whose leaves "let down" stood backed against the wall, and held on its cold, bare, polished surface the family Bible, (not the one in use), "Pilgrim's Progress," and a few other books. By way of art, the "sampler" which Cicely had worked when a child was framed and hung over the mantel, which contained two plaster-of-Paris casts—a not unesthetic shepherd and shepherdess, as glaringly white as plaster-of-Paris could make them.



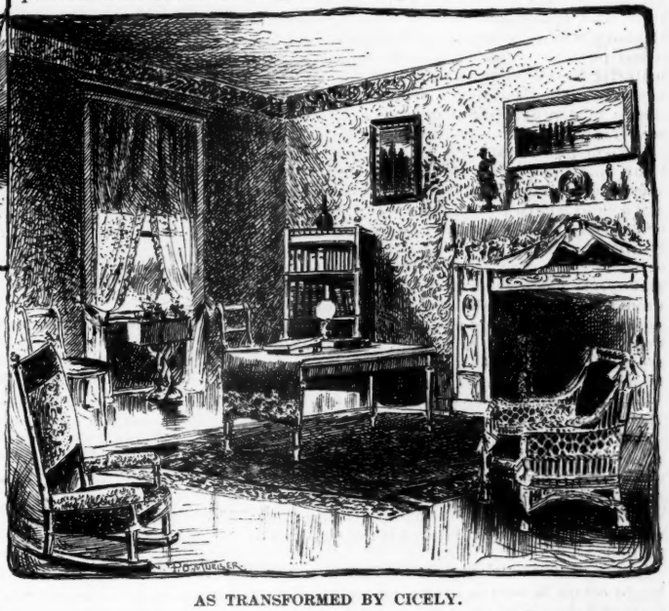
THE OLD PARLOR.

Cicely Norton was a farmer's daughter, living in one of the hilly counties of New York State. Every acre of Mr. Norton's farm had been wrested from rocky barrenness by unceasing toil. He had had no time to pay attention to art. That the house itself was picturesque was no fault of his. Originally composed of a large kitchen or living room, a sitting room, and one sleeping room, it had been added to and built on here and there as the children increased in years and numbers. There had been no money to waste on fine furniture, and the parlor described above was looked upon as a very grand room, and used only on grand occasions.

The new era began when Cicely returned from the East, where she had had a year at boarding school at the expense of an aunt for whom she was named, and with whom she had lived. Cicely was a blithe, sweet-natured girl who had not been at all spoiled by her boarding-school experience. She did not look down on the little farm, nor on the parents who had toiled there so many years, but she had felt the refining influences of a different home atmosphere, and she did not think it impossible to bring something of the same nature into her own home life. The district school was lacking a teacher when she returned, and it was considered quite an honor to the community that 'Squire Norton's daughter, who had "ben away to boardin' school," should be willing to fill the post. Our brave little girl knew that great reforms move slowly, and her first quarter's earnings were spent in books, a subscription to *St. Nicholas* for the children, and the AMERICAN AGRICULTURIST for her father.

Meantime she let Ted, her brother, a year or two younger than herself, into her plan. Ted was a bit of a mechanic in his way, and under his sister's directions made a pretty set of pine book shelves, four in number, and just fitting into a nook on one side of the fireplace, for this room had one essential of beauty and comfort when it was in use—a big old-fashioned fireplace. It was no part of Cicely's plan to put these shelves in the parlor at once, and they were kept in her own room for the time, after being stained with light oak stain and varnished.

In buying books, Cicely took advantage of her position as a teacher to get the discount which is allowed to professional people, and she further sent to publishers for lists of books and prices instead of buying haphazard. Having only a little money to expend, she did not always get bound editions. She bought paper editions of Dickens and Thackeray, and with Ted's help covered them so neatly with pasteboard covers that they will doubtless last a life-time. Cicely had "a friend at court" in the person of the eastern aunt, who executed any little shopping commissions for her, and her next move was to send for samples of wall paper. One having a light ground, with splashes of gilt, and a reddish brown vine running through it was chosen, at fifteen cents a roll, and Mr. Norton's consent to papering the room was obtained, Cicely and her brother doing the work in the evening.



AS TRANSFORMED BY CICELY.

"Makes the rest of the room look kind of shabby," was Mr. Norton's comment when he saw the pretty, freshly-papered walls.

"If I don't ask you for a cent of money to spend on it, will you let me fix the room to suit myself?" said Cicely, while she stole a white arm around her father's neck.

"Have your own way," said Mr. Norton; "young folks go ahead of my day."

Meantime Ted Norton, who before his sister's return had spent his evenings at the village grocery, when the chores were done in season to go anywhere except to bed, now spent all his time with his sister, reading aloud in some of the new books, or helping her to carry out some of her plans.

The floor was next to be attacked. The carpet was taken up and disclosed a more than ordinarily even and well-laid floor of rather narrow boards. It took one whole evening to putty the cracks, but Ted and Cicely worked with willing hearts and didn't mind a slight backache in a good cause. Should any of the readers of the AMERICAN AGRICULTURIST attempt a like feat (as I am sure they would if they could now spend an evening in Mr. Norton's parlor) they must buy their putty by the pound, and use an old knife to press it into the cracks. When this was thoroughly hardened a coat of mahogany stain was given. This comes all ready prepared in quart cans. One can is sufficient for an ordinary room. Let this dry for twenty-four hours, and then varnish with floor varnish. After this is very hard (give it several days) apply a second coat, and wait a week before you walk on it.

A pretty Kensington rug, seven by nine, and costing four dollars, was laid in the middle of the floor. On this the mahogany table, with both leaves down (except in the evening when the whole family were gathered round it), looked very fine, with a scarf of olive plush thrown across it. The plush was what is known as cotton plush, or canton flannel with a nap on both sides. A pretty trailing vine of wood brown with red flowers had been cut from cretonne, and sewed with silk floss on the ends. Cicely told me she used to carry this to school with her and work at it when she had to keep a pupil in, and at recesses and during lunch hours. One of Cicely's extravagances was the purchase of a pretty lamp for this table, which held, besides books that were really being read, Cicely's little work basket.

The set of shelves was brought down and placed in the corner, and when the books were on it the room looked furnished at once. The windows had paper shades of gaudy floral pattern, but roller shades of ecru holland were substituted. Over this were hung white curtains of open work scrim, which cost only seven cents a yard. It was double width, and curtains at each of the three windows required eighteen yards; poles and rings were thirty-seven cents a window, and the ribbons of old gold and cardinal for looping them back brought the cost up to $3.50 for the whole. The chairs had to stay, but a light wicker arm-chair which cost $3.50, and a real old-fashioned Boston rocker for comfort were added. The latter was cushioned, seat and back, with pretty cretonne, stuffed with cotton batting, and was really luxurious.

The mantel was adorned with a scarf to match that on the table, and the plaster casts were turned into old Florentine marble by being painted with a brownish paint, most of which was at once wiped off with a cloth. Being artistic in design they were really elegant looking now. The "sampler" was banished to Cicely's own room, and Cicely is now looking forward to the time when she shall have saved money enough for some pretty engravings for the walls.

Now if any young girls who read the AMERICAN AGRICULTURIST feel that they would like to emulate Cicely Norton, and have a room which they would like to beautify, whether parlor, sitting room, or sleeping room, I shall be pleased, if they feel that I can be of any assistance to them, to have them write to the editor of the AMERICAN AGRICULTURIST, stating just how the room is now furnished, and how much or how little money they wish to expend upon it. [But if some one in each of the one hundred thousand families where the

AMERICAN AGRICULTURIST is read should respond to the author's request would n't she have her hands full!]

First Intimations of Spring Fashions.

Long before the trees don their leafy Spring robes of tender green, and while Winter still holds the earth in his icy grasp, enterprising shopkeepers bring out their new cotton goods, dainty lawns and thin challis, for well they know that many ladies like to make these up in the comparatively quiet days of March and April. The first importations of ginghams and zephyrs this year really seem to excel anything of the kind we have had heretofore. Stripes, plaids and checks are, as usual, the prevailing designs in ginghams, but of these there is an infinite variety; and all cotton dresses will be made this season of the same fabric throughout, and not in combination with a plain material. The colors are subdued and of the odd shades so popular in woolens, such as serpent green, queer grays, gobelin blue, russet brown and old rose, while a very pleasing novelty is an open-work lace stripe alternating with one of a solid color. A peculiar weave, too, shows either the body or stripe in irregular dashes on another color or darker shade, thereby making the goods appear as though tiny twigs from a dead tree were scattered over them. The satines display much brighter tints than the ginghams, while the designs are principally conventional figures and straggling vines thrown on a dark background. The challis—which, however, are a mixture of cotton and wool—are in much the same styles, except they have dark figures on light backgrounds. One of the most stylish novelties in white goods is a Victoria lawn that comes in skirt lengths, woven at the bottom so as to require no hemming, and bordered by many rows of wheels worked on the material in red, blue or pink, and filled in with lace work, thus forming a trimming five or six inches in depth, while narrower embroidery to match comes for the waist and sleeves.

The waist for an indoor gown, of cashmere or any light wool suitable for the Spring, should be cut short on the hips, with a rounded point in front and a short, sharp point in the back. The plaited or gathered skirt is mounted on the bodice, which is ornamented only with revers, but a sash of surah or some soft silk is added, folded in three flat plaits, very much wider in front than on the sides. From the hips this sash follows the line of the corsage to the back, being still quite narrow, and is there tied in a large, wide bow. Jacket bodices are fashionable for the street, and with these much thought and taste are expended on the undervest, which is frequently separate and fastens behind. These little fancy waistcoats may be shirred, smocked, or formed of many folds, crossing and recrossing transversely. They may be of the same material as the suit, of velvet, soft silk, or muslin, and it is an excellent idea to have several vests to wear with the same costume, thus forming a variety that will be appreciated if the wardrobe is limited.

Knife plaited silk muslin in white, cream or bright colors, is used as a turned-over frill for the neck and sleeves of dress waists, while it is sometimes continued down the front, in a cravat or jabot. An economical as well as stylish substitute for ruching is to use narrow gros-grain ribbon with a pearl edge. Gather the lowest edge and sew it inside the dress collar, so as to show only about a fourth of an inch, and if liked a few inches can be left to tie in a tiny bow in front. White, cream and red are the favorite colors for these little frills.

Fringe is coming into fashion once more and appears on cloth dresses, tea gowns and house sacques. It is usually of the heavy, netted silk kind, and house jackets have silk strands of a contrasting color knotted in the edges, on the fichu round the neck and in the flowing sleeves.

It is too early to say much on the subject of Spring hats, but the Alsatian toques, made to match the outside garment, will probably be worn quite late in the season, especially when lightened by a bunch of pinks, violets, pansies or other fresh looking blossoms, which are used without foliage and placed directly in front.

The newest veil for protection against the March winds is of black dotted net, bordered all around with Chantilly lace. It is long enough to entirely cover the face, and is drawn back under the chin, and also at the top, around the hat, by the narrowest ribbon run through the edging lace. These tied-back veils can, only be worn comfortably with large hats that have a projecting brim; if with a bonnet or small toque, the lower edge should hang loose.

The feather boas can be worn much later than those of fur, and they are also shown formed of many close plaitings of soft silk, fringed on the edges. The newest ones are flat instead of round, and are shaped to fit the neck, with flat bands hanging down in front that are tied at the throat and waist with watered ribbon. Feather boas in light shades are also worn with evening costumes, while full ruchings of silk and lace promise to be very popular for trimming light gowns.

The Windy Month.

I. SMITHSON.

It has been said, and very truly, that to March and not January belongs the first place in the procession of months. It is in March that the first awakening of sleeping Nature begins, while in January, which is the depth of winter, the year is sound asleep, and gives no sign of beginning its work. The old Romans must have realized this, for their year began on the twenty-fifth of March, and it was not until 1752 that the change was made in England, when it was decreed by act of Parliament that 1753 should begin on the first of January according to the New Style. March must always have been more blustering and stormy than any of its fellow-months, for the Romans named it after their war-god Mars, and the Saxons called it Hlyd Monath, "Stormy Month."

A very old festival which occurs in March is Mid-Lent Sunday. This day was formerly known as Mothering Sunday, because it was the custom for the people to go in procession to the mother church and lay their Easter offerings before the altar. Since the thirteenth century, however, the practice has fallen into disuse, the people going instead to the homes of their natural earthly mothers, and there feasting upon simnel cakes and other delicacies. In some rural parts of England, the day is still called Mothering-Sunday, and the family gatherings known as "Motherings," and in Lancashire the simnel-cakes are still eaten in memory of the feeding of the five thousand, related in the gospel of the day.

Spenser, the poet, speaks of "Sturdy March, with brows full sternly bent," but William Cullen Bryant says in defense of the stormy month:

> "The year's departing beauty hides
> Of wintry storms the sullen threat;
> But in thy sternest frown abides
> A look of kindly promise yet.
>
> "Thou bring'st the hope of those calm skies
> And that soft time of sunny showers,
> When the wide bloom on earth that lies,
> Seems of a higher world than ours."

Physical Training of Girls.

MRS. M. C. WELD.

For the first thirteen years of their lives the regimen for boys and girls should be substantially alike. I believe in "tom-boys." Dreadful name! It haunted my childhood like the shadow of an ogre. The demands upon the nerve power of women in mature life are as great as the demands upon men proportionately to their strength, and if the same care were bestowed upon the physical development of girls and women as is bestowed upon that of boys and men, who can calculate the effect upon our nation? It is on record that the Roman race was preserved for generations after its decadence began by the extraordinary attention given to the health and soundness of Roman women. In his excellent work, "How to Get Strong and How to Stay So," Mr. Blackie has a chapter on exercise and physical development for women full of excellent suggestion, which is commended to girls and women who would acquire that physical strength which will render all their duties easy.

The clothing at this period of life, as at all others, should be so adjusted to the body as not to interfere with its activities. The covering of the feet should receive careful attention, and tight, high-heeled, ill-fitting shoes be utterly abjured. Suspenders or their equivalent should form as integral a part of a girl's wardrobe as of a boy's, of a woman's wardrobe as of a man's. When there is reason and sense in putting corsets on boys there will be equal reason and sense in putting them on girls. The Venus di Medici was modeled from a female figure that was never deformed by a corset. But foolish girls and women will continue to compress their waists and die in consequence, which is perhaps not so bad a thing for the world as it is for them.

Lenten Cooking.

The wisdom of Moses as a law-giver is clearly established by the fact that after the lapse of the many centuries since he established certain fasts for the children of Israel their value as a hygienic measure is still recognized. Many of the Hebrew customs were engrafted on the Christian church, and in the forty days of Lent we have a remembrance of the forty days of the deluge, the forty years' wandering in the wilderness, Moses' fast on the mountain, and that of Elijah in the woods. There are many who observe Lent, although belonging to denominations where it is not enjoined as a religious observance. The system naturally craves lighter food after the heavy diet which the cold of winter has rendered necessary. To such we would recommend various

Vegetable Soups.—A recipe for onion soup will serve for potato, pea, bean, lentil, turnip or carrot soup with very little alteration. Slice two large onions, and fry in a little butter or dripping until light brown. Cover with one quart of water; let it simmer one hour, and add a pint of boiling milk. All of these soups should be thickened as follows: Melt a tablespoonful of butter in a saucepan; stir in a large tablespoonful of sifted flour, and add the boiling soup slowly after it has been pressed through a colander. Season to taste, with salt and pepper, add a little minced parsley, and pour into the tureen over dice of toasted or fried bread. For any of the other vegetable soups whether fresh or dried, boil the vegetables until very tender without first frying, and proceed as above, except that in the case of pea, bean or lentil soup no milk should be added. Celery is a fine addition to any of these soups. A milk soup is very healthful and nice, especially for children. Bring one quart of milk to a boil, season with salt and a little sugar, and thicken with one teaspoonful of corn starch. It is improved by the addition of one beaten egg yelk, and should be poured over little dice of fried bread.

Farina Soup is quite an addition to the housekeeper's list of Lenten soups. Put some butter in a frying pan, and add eight spoonfuls of farina; stir until it begins to color, add one quart of water and boil fifteen minutes. Season with salt and pepper, and add the beaten yelks of two eggs. Dilute with hot milk if too thick.

Canned Lobster may be prepared in a number of appetizing ways. Cut it in small pieces and heat in a saucepan with a little milk or cream and a seasoning of salt and pepper, and pour over toast. Another way is to put it in a buttered pudding dish and pour over a white sauce; dust with bread crumbs, and bake brown.

Noodles.—Beat three eggs slightly, add half a cup of water, a little salt, and flour enough to make a rather stiff dough. Work it a great deal (the more you work it the more pliable it will be), adding flour when it begins to stick to the hands or table. When very pliable, cut off a small portion at a time and roll as thin as a wafer; sprinkle lightly with flour, and roll into a tight roll. Lay these aside until all the dough has been used in this way, and then cut it into thin slices, forming little disks. Let them dry an hour or so before using in a soup as a vegetable, or in a pudding. To use as a vegetable, have ready three quarts of salted boiling water, and a cupful of bread crumbs fried in butter the size of an egg. Throw the noodles a few at a time into the water, and boil until they are done; skim them out, and keep in a warm place while you cook the rest. Pour over some melted butter, sprinkle the fried crumbs on top and serve with fish, or by itself. Leave half a cupful of the cooked noodles in the water in which they were boiled, add a tablespoonful of butter, one of parsley, and salt and pepper; serve as a soup. Cooked as above they make a nice pudding. Drain them and lay on a sieve to dry. To one pint of the noodles, add one-half cup of butter, one of sugar, three eggs, a cupful of mixed raisins, currants, chopped almonds and cinnamon. Mix well, butter a pudding dish, bake an hour, and eat with or without a thin sweet sauce.

Baby's Hunt for Dandelions.

FANNY M. JOHNSON.

"The baby is stirring, Trudie. You will have to amuse her a little while, so that I can finish this dress in season," said Mrs. Stannard.

Gertrude gave her drawing-board an impatient push. "What a bother!" she said under her breath as she rose to go to the cradle. She did not make the remark loudly enough for her mother to hear, for the dress which was to be finished was her own, and was to be worn to a picnic that afternoon; and, rather than bear a disappointment about the dress, she would care for the baby a little while.

She rocked the cradle, but did it so rapidly that the motion failed to lull the baby to sleep again. The little one opened her pretty blue eyes, reached up her tiny hands and fretted to be taken up.

"Oh, you little nuisance!" said Gertrude. "If you belonged to me I would just shut you up by yourself somewhere, and let you fret." This time her mother heard her remark.

"Gertrude, I'm ashamed of you," she said. "Do you think that is the way I did by you when you were a baby?"

Gertrude was really a little ashamed of herself, though she would not have admitted it. She colored slightly as she lifted the baby from the cradle. Baby was a sweet, rosy little thing, just large enough to creep about the floor. Rings of soft hair, moist from slumber curled over her pretty head, and her cheeks were pink and dimpled. Gertrude admitted to herself that Baby was pretty enough, but refused to admit that she loved her, for she considered Baby in the light of a grievance.

Until she was thirteen years old, Gertrude had enjoyed all the attentions and privileges of an only child. She was a bright, promising girl, quick at her lessons, and with a decided talent for drawing. Her mother had always entered heartily into all her interests and plans, and had been a delightful companion to her young daughter—till Baby came. Then, it seemed to Gertrude, everything had changed. Mother was no longer at liberty to take her about to entertainments, to go on drives and sketching excursions, to give so much attention to her pleasures and wishes. She was just as kind and loving, just as careful for her daughter's comfort, but she was too busy—"always fussing with that baby," Gertrude grumbled to herself. The eldest daughter was no longer the only object of love and attention to Father and Mother, and she cherished a feeling of coldness and jealousy toward the little intruder.

Mrs. Stannard saw it all, and it grieved her deeply; but she seldom spoke to Gertrude about her feeling, trusting to time and the baby's own winning ways to reach her sister's heart. Though she did it with rather an ungracious air, Gertrude really tended the baby gently and carefully, this morning, till her picnic dress was finished, and she then went away to the afternoon's pleasuring. In the following autumn, when Gertrude was fourteen years old, she left home for a boarding-school, and for nearly two years she saw Baby Eleanor only a short time once or twice a year when she returned for her brief vacations. Away from home she learned to appreciate better her mother's sweet devotion and love. She became more generous and womanly, and outgrew in some measure her childish jealousy of her baby sister, though she still showed the child very little fondness or attention.

Baby Eleanor was three years old when Gertrude came from school to remain at home. She was a merry, lively little creature, and the stately name of Eleanor seemed so little suited to her at this age that she was seldom called by any other name than Baby.

"I can't have her mussing around among my things," Gertrude would say, and slip the bolt of her door when she heard the little feet pattering along the hall. "Go away, Baby; Trudie's busy," was the usual answer when Baby came to ask for a song or a story, or leaned her little curly head against her sister to look at "Toodie's pitty pictures."

In her innocent little heart Baby never realized that she was snubbed or slighted. She had been used to nothing but love and kindness, and she greatly admired her pretty sister Trudie. She loved to smooth Trudie's beautiful hair, to pass her chubby hand over the pretty summer dresses, to be given a glimpse of Trudie's box of ribbons or portfolio of sketches; but this was a pleasure which Gertrude too seldom gave her. Still the little feet were always ready to run on errands, the little hands to fetch and carry, and she looked up to Gertrude with unfaltering love and baby loyalty.

One bright afternoon in June, Gertrude's aunt Eleanor, whose namesake Baby was, called to take Mrs. Stannard for a drive to the next village. Gertrude was at work upon a painting in which she was greatly interested—the photograph of a handsome school friend, "the beauty of the school," furnishing the face and figure, which Gertrude was finishing with a gypsy dress. Her easel was stand-

"STILL THE LITTLE FEET PATTERED ON."

ing in the sitting-room where her mother was sewing, and Baby was taking her afternoon nap in the adjoining bedroom.

"You'd better go, mother," said Gertrude, as Mrs. Stannard hesitated for a moment over the invitation. "It is such a lovely day, and you will enjoy it."

"I shall have to leave Baby with you, Gertrude," replied the mother. "Will you look after her when she wakes, give her a lunch, and see that she doesn't get hurt?"

"O, yes," said Gertrude. "I can see to her well enough. Baby's always good with me, and I'll take care that she doesn't get into any mischief."

Aunt Eleanor's horse was restless and she was in a hurry, so it was but a few minutes before Mrs. Stannard was ready, and she and Aunt Eleanor drove away together. Gertrude watched them from the door till they started, and as she sat down again to her drawing the clock struck two.

The eyes of her gypsy girl did not quite satisfy her. She looked at the picture thoughtfully, then mixed her paints and took up brush and palette again. She had painted for a few minutes industriously, and was lost in the interest and admiration of her work, when a little voice behind her said, "Pitty, pitty picture!"

Gertrude turned around with a start. Baby stood in the bedroom door, her curly hair a-tumble and her eyes shining like two stars.

"Why, Baby Eleanor, how you startled me! Why didn't you have your nap out?"

She rose with an impatient sigh, brought Baby's chair and bib-apron, and prepared the lunch, her thoughts all the while on her drying paint-brushes. Baby had a tiny low table at which she sat to eat her luncheon. As soon as she was seated Gertrude returned to her painting.

She had just become interested in the work again when Baby's voice at her elbow said, "Toodie, take apron off!"

Baby had finished her lunch already, and the painting was again interrupted. Gertrude removed the apron, carried away the remains of the luncheon, and considered what she could give Baby to do to divert her attention.

"Don't you want to go out in the yard, Baby, and pick Trudie some dandelions?" she suggested.

Baby looked doubtful and shook her head. "Dandy-i-ons all gone," she said.

"O, I guess you can find me some if you look sharp. Come, now, Baby, just go out and look for them. Hunt around till you find some for Trudie."

"It's nice and shady out in the yard," she said to herself to ease her conscience. "She'll be more comfortable out there than in here."

Then the painting again quickly absorbed her mind, and in the quiet of the room Baby was forgotten and the flying moments went by unheeded.

The pretty gypsy eyes laughed out from the canvas, at last, with just the expression she had tried so long to catch; the plump brown gypsy hand arranging the kerchief on the head had just the right roundness, the head itself had a perfect poise. Gertrude stepped back to look at the canvas at a distance, drawing a long breath of satisfaction and relief. Just then the clock struck three.

The sound startled Gertrude out of her artist's dream. Almost an hour had flown by unconsciously. Where was Baby?

She hurried to the door and looked anxiously about the yard. There was no curly head bobbing about among the shrubbery, no Baby anywhere to be seen; but the gate was swinging open and a little sun-hat was lying outside, near the roadway.

"Poor little thing!" thought Gertrude, with a pang of self-reproach. "She couldn't find any dandelions in the yard and has gone up the road hunting for them."

She ran out, picked up the little sun-hat, and, shading her eyes from the sun, called, "Baby! Baby! Where are you?"

There was no answer, but from above the curve of the bank, at the top of the green hill that sloped down from the railway to the village street and the Stannard cottage, came the distinct, not very distant, shriek of the locomotive. What if Baby had climbed the hill, still seeking for dandelions, and had gone upon the railway track!

With the pang of pain and terror that followed the thought, Gertrude realized what a place Baby Eleanor filled in their pretty cottage home, what a desolate home it would be without that merry little face, that sunny baby presence that she had cared for so little, had valued so lightly. If her mother should go back to her home and find it bereft of her baby, and through Gertrude's selfish negligence!

She struck the nearest way across the field, crept through a brush fence, tearing her hands and arms on the thorns, but never feeling the smarting scratches. Up the hill slope she struggled, crying the Baby's name, and hearing every moment that dreadful roar grow nearer and nearer. Yes, there was Baby on the track above, trotting along unconsciously, the sunlight shining on her silky curls and little bare arms.

"Oh, Baby, Baby! Hurry! Hurry! Come to Trudie!" shrieked Gertrude, and the terrible thought flashed through her mind: "I never have tried to make her love me; I never have been tender and kind. What if she will not mind me?"

Still the little feet pattered on, tripping sometimes over the great sleepers, and only a few rods away came the great black engine thundering around the curve.

There were half a dozen yards still between the panting, flying girl and the railroad track. Baby halted on a sleeper whose edge jutted over the bank. The train was almost upon her.

"Jump, Baby! Jump!" cried Gertrude.

The baby eyes opened wider in wonder, the baby face, which had never known a shadow of distrust, broke into a smile, and she jumped—

Gertrude caught her in two quivering, outstretched arms as the train went thundering by.

"Don't c'y, Toodie," lisped Baby, trying to wipe the tears from Gertrude's face, as she sank sobbing upon the hillside with Baby clasped tightly in her arms. "Baby hunted and hunted, but there isn't any dandy-i-ons!"

When Gertrude told her mother the story, that night, with broken sobs and words of penitence, Mrs. Stannard added no word of reproach or caution. She knew that Gertrude had learned her lesson, and no reproof was needed.

Gertrude had found her heart at last. She had learned to love the Baby!

How to Stuff and Mount a Bird.

The skin being thoroughly dry, the operator must provide himself with the necessary articles as shown in Fig. 1. Then take two pieces of wire suitable in size to the bird; that is, as large as can easily be inserted in the legs, and with the round pliers bend them into shape as shown in Fig. 2, having the ends sharp, which may be done by cutting obliquely with the pliers. *A* represents the back or main wire, *BB* the leg wires, *C* the neck, *D* the tail and *E* the loop in which the leg wires are fastened. The skin is then laid on its back on a table or board and a small wad of cotton inserted, reaching from the skull to the tail, and thick enough to make a good foundation for

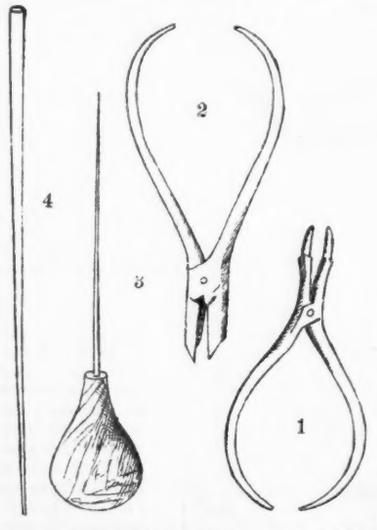


FIG. 1. IMPLEMENTS FOR TAXIDERMY—1, Round Pliers; 2, Cutting Pliers; 3, Bodkin; 4, Skewer.

the back wire to rest upon. Then take the point *C* and pass the wire at the head into the marrow where the neck is cut off, through and into the skull till it holds firmly; then pass the end *D* through the flesh upon which the tail feathers grow, about the center and rather below than above, letting the end of the wire protrude a little. The next operation requires some practice and great care. It is the inserting of the leg wires. This is done by forcing the sharp end of the wire into the center of the foot and up the back of the legs. In doing this the operator must remember the position of a bird when alive; there-

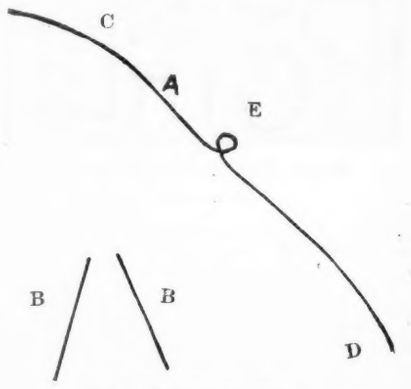


FIG. 2. FOUNDATION WIRES.

fore, instead of passing the wire the whole way within the skin of the leg, pass it through the skin to the outside, where the bone is cut off at the knee, and again through the skin from the outside, where the knee would come when the bird was perched or standing in its natural attitude. This done take some cotton wadding and fill the body until it is given its natural size, being careful not to have it too large. Sew the skin together, beginning from the top of the breast, being careful always to take the stitches from the inside; otherwise the feathers will be drawn in. Sew loosely and draw together with the button hook.

The eyes may be bought at any bird fancier's or taxidermist's shop; the color and size depend on the bird. With the forceps draw the eye from the socket and fill the cavity with cotton; then insert the glass eye, letting the lids rest on the edge so as to hold it in place. All that remains now is to place the bird upon a branch or board as may be most natural, and wind some thread carefully around the body to hold the wings and feathers in place, until the specimen is dry. Allow the bird to remain in this condition for two or three weeks, when the thread may be safely removed.

Performing Cats.

Those persons who believe cats to be incapable of profiting by education would change their opinion if they could see the exhibition of performing cats in Paris, France. The skill and docility of the little animals are truly wonderful, and would, even in dogs, be considered a proof of great intelligence. The cats are concealed in two small wooden houses or kennels, which stand opposite each other with a row of fifty chairs between them. The performance begins by the trainer tapping on the roof of one of the houses. Immediately a cat comes out of the door and, after being stroked and patted by its master, leaps to the top of the first chair and then goes lightly and gracefully from one chair to the next, stepping only on the backs, until it reaches the other house, into which it retires. Each cat does this in turn, and then two cats cross the chair-bridge in opposite directions, one going over the tops as before, and the other passing along the horizontal bar just below. Long planks are then laid over the chair-backs, and a number of wine-bottles placed in a row at short intervals, and the cats wind swiftly in and out between these bottles without missing one or knocking one over. A still greater difficulty is presented by a small wooden disk being put on the top of each bottle, and a cat stepping from one to another while other cats follow the serpentine walk among the bottles below. Chairs and planks are then removed, and a number of trestles set up between the two houses. The cats leap from one trestle to another, going over bars and through hoops with all the precision and agility of a circus-rider. A large wire hoop wrapped in tow which has been soaked in alcohol is held up and set on fire, but the procession of pussies, nothing daunted, leaps through the flames obediently. Tight-rope dancing is the next performance, and a number of live, white rats placed on the rope receive no attention whatever from the cats. The last scene is, perhaps, the most curious of all. Several small birds and white mice are

placed on the rope at regular intervals, the latter looking about them fearlessly with their sharp little eyes, and the birds calmly pluming their feathers and strutting on the rope. The cats walk along the tight-rope, stepping over the birds and mice, and as the last cat passes a bird flutters up and perches on its head, and the procession files gayly off amid the applause of the delighted audience.

Answers to Anagrams.*

1 Patience.
2 Because.
3 Frontier.
4 Telegraph.
5 Sediment.
6 Botanical.
7 Sponge.
8 Fascinate.
9 Romantic.
10 Interwoven.
11 Glimpse.
12 Obstacle.
13 Barbarian.
14 Mustache.
15 Bondage.
16 Gossamer.
17 Residence.
18 Wearisome.
19 Confectioner.
20 Instrument.
21 Courtship.
22 Fiction.
23 Reliance.
24 Desperate.
25 Stitches.
26 Delegation.
27 Tireless.
28 Magnitude.
29 Rheumatic.
30 Personal.
31 Atmosphere.
32 Delicious.
33 Steadily.
34 Brandish.
35 Moderate.
36 Semblance.
37 Porcelain.
38 Failure.
39 Cribbage.
40 Alacrity.
41 Whistle.
42 Culminate.
43 Transfer.
44 Grandeur.
45 Historical.
46 Pastime.
47 Percussion.
48 Myriads.
49 Inclosure.
50 Climate.
51 Sensational.
52 Principle.
53 Standard.
54 Dwindle.
55 Butcher.
56 Source.
57 President.
58 Gusto.
59 Methodist.
60 Ancient.
61 Meadow.
62 Staunch.
63 Hostile.
64 Creator.
65 Solitaire.
66 Distance.
67 Importance.
68 Aghast.
69 Pitcher.
70 Athletic.
71 Gesticulate.
72 Dwarfed.
73 Reliance.
74 Sovereign.
75 Manifold.
76 Ascertain.
77 Elaborate.
78 Reasonable.
79 Elegant.
80 Worship.
81 Republican.
82 Ignorance.
83 Peanuts.
84 Material.
85 Catholic.
86 Insurance.
87 Disastrous.
88 Railroad.
89 Disease.
90 Episcopalian.
91 Campaign.
92 Handsome.
93 Sleigh.
94 Temperance.
95 Directors.
96 Granite.
97 Transient.
98 Information.
99 Physician.
100 Majority.

*See Page 76, February number.

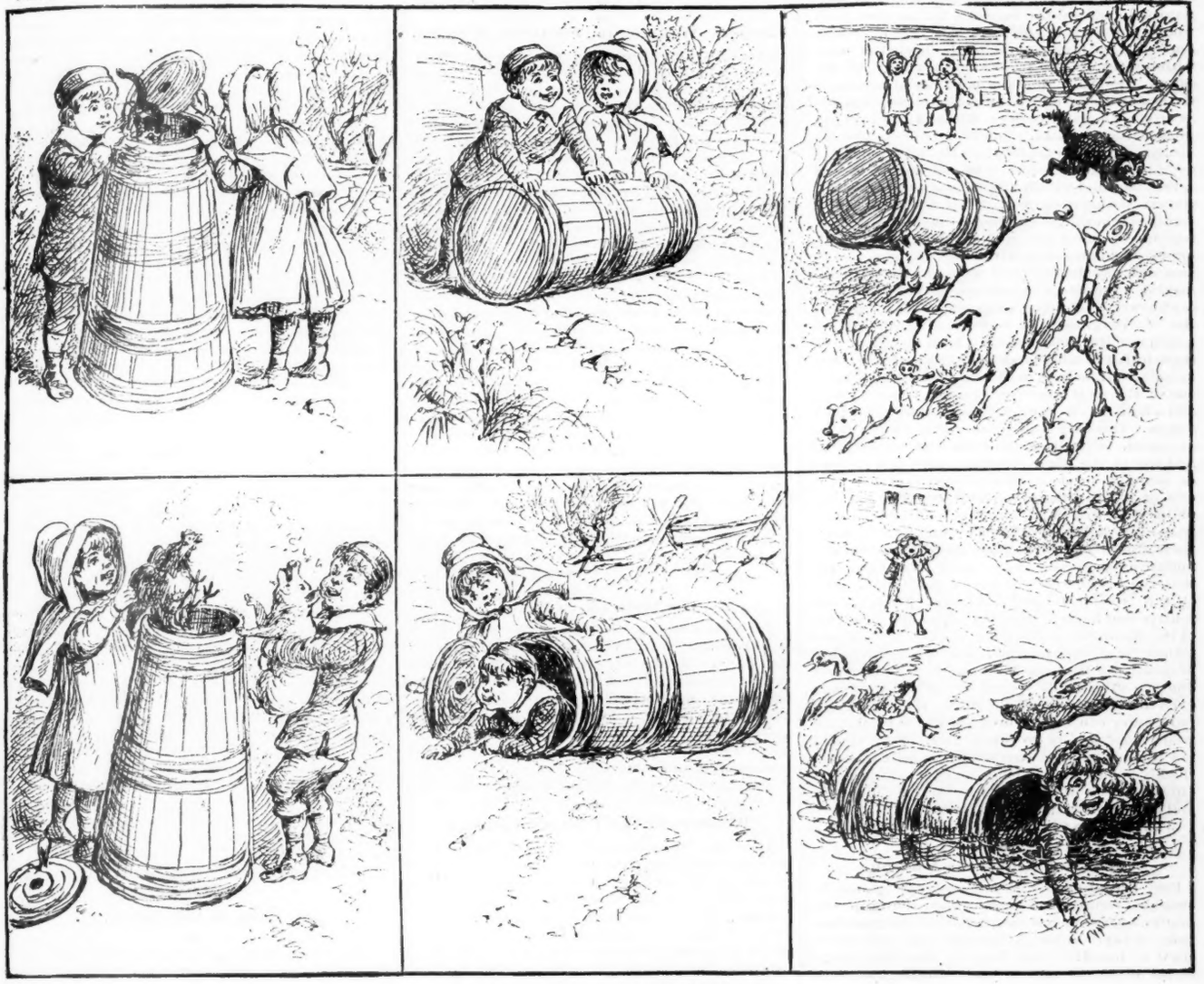
The Girls' Place on the Farm.

EMMA J. MELLETTE, COLORADO.

A good garden is a source of profit—or ought to be—as well as a source of pleasure. In this part of the farm the children should take an interest and have a share. Can a farmer afford to have his girls in the house, piecing quilts and making fancy-work, when the garden is overrun with weeds? By no means; and the sooner girls are made to understand that the garden is a proper place for them, the sooner they are taught that outdoor work is interesting, the sooner will we have a hardier, healthier race of women. No girl who has not tried the experiment can understand what a subtle charm there is in a well-kept garden, where grow long rows of peas and beans, turnips, onions, lettuce and cabbage. To see the ground as clean as a floor; to watch each day how every plant grows larger and larger; to reflect that those luxuriant growths represent a cash value, makes the garden as interesting as a flower bed. To anyone who will cultivate a taste for the work, it will soon become as satisfying as the petted house plants, which require so much care and attention. There are, however, many flowers as hardy as vegetables, and if an occasional flower seed be dropped along the row the effect will be quite pleasing.

To the farmers I would say: Teach your girls that there is a place on the farm for them. You can well afford to pay them for every pound they raise. You buy their clothes; why not let them earn their money instead? They will be just as saving, and the sense of usefulness and independence they will thereby acquire will make women of them. Plow the land early, enrich it well and help them select suitable varieties; on their first trial, to give them encouragement, help them mark the ground and sow the seeds. You may have to plow between the rows at first, if the patch be large, but put out a good lot of mangel-wurzels and carrots for winter cow-feed, and the girls will repay you.

To the girls: Take an interest in your work. Do it well. Make a study of the business, and in a year or two you will find yourself possessed of a knowledge whereby you can earn your pocket-money,—nay, more, your livelihood without going to the city. Don't be afraid of your complexion, and don't wear a sun-bonnet; a large, light straw hat, such as is commonly worn by the sterner sex, will be found at once more comfortable and more becoming than that relic of bygone ages, the sun-bonnet.



FUN AND SORROW.

Restoring a Scythe Blade.—Many scythe blades are laid aside while perfectly sound, because they have become bent by striking hard substances, or the thin part is twisted out of the proper level, so that it will not take hold of the grass. J. T. Baker, of Berrien Co., Mich., writes us that he finds a monkey wrench an excellent tool for straightening such blades, and setting them on the proper axis. The wrench is adjusted to fit the back, or the thin part of the blade as may be desirable. This is much more effective than the old method of hammering a bent scythe on the top of a stump.

FROM NEAR AND FAR.

—o:o—

Our readers in all parts of the world are cordially invited to contribute letters or notes to this department.

A Boom for Montana.

The six New England States, if transported to Montana, would be contained in either half of it. Montana would make nearly five States as large as the great State of New York, or 115 such States as Rhode Island. Within her territorial limits is embraced the largest breadth of mining, agricultural, meadow and pasture lands within the confines of the Union. The immense tract, nearly 20,000,000 acres, thrown open for settlement last May is, for the most part, the most valuable grain land in the United States. It will mature both grain and vegetable crops without irrigation and will yield such returns to reward the farmer's toil as have been wholly unknown in the Eastern or Middle States. Forty-five to fifty pounds to the bushel of oats, with a yield of 75 to 125 bushels per acre, are assured. The No. 1 Montana hard wheat stands at the head with the miller. Of vegetables such yields as no other country besides Montana has ever approached are certain. Think of potatoes, sound, mealy and most excellent, attaining a weight of eight to ten pounds apiece! Do not doubt. This is actual fact and within the figures as ascertained from trustworthy sources. What shall be said of a turnip reaching the enormous dimension of four feet in circumference, and with correspondingly improved quality as to hardness, crispness, soundness and sweetness? And what of the cabbage making a growth of 20 to 40 pounds per head, with cauliflower of similar dimensions? The yield of the native grasses is equally astonishing. No country on the globe produces such feed as covers these hills and table-lands, both the basins and the mountains from base to summit. Of the blue-joint, one of the most nutritious grasses, three to four and a half tons to the acre have been cut the past season. This variety of grass, whether eaten green or cured, is well adapted to the constitution and use of the horse, whether employed in road or draught service. Thirty-three different species of native grasses flourish on the hills and plains of Central Montana, all of which possess nutritive properties of a high order. Furthermore, these almost boundless plateaus will produce and mature as good corn as ever grew in Ohio or Illinois, the leading corn States of the Union. The climate is healthful and salubrious. There are extensive coal fields at different points along the line of the Manitoba railway, and supplies of wood and timber for all time to come. The rich basins of the Missouri, the Milk, the Marias and the Teton rivers and the table-lands spread out to the westward even to the foot-hills of the Rocky Mountains, and pure water can be procured anywhere by sinking wells from twenty to thirty feet. Why should not this magnificent country be immediately and thickly populated by young Americans from overcrowded cities and districts in the East? Homes and fortunes certainly await them here.

JAMES MCKNIGHT, Choteau Co., Montana Ter.

Apple-Rot Along the Hudson.

Few except Baldwin apples were grown in Dutchess county, last year. Since the crop was first in, every one has complained of the great loss from decay. Although special care was exercised in handling and housing the fruit, there seems to be an unusual and extreme loss, very many specimens showing core rot, which is so characteristic of the pear. It is useless to ship them except for short distances, as rot appears so rapidly that although the apples are picked over weekly the loss is at least ten per cent at every picking. Is this peculiar to our region or are you informed of a like condition elsewhere?

J. G. BRONSON, Dutchess Co., N. Y.

Gooseberries in Eastern Tennessee.

Gooseberries have been gaining favor rapidly within the last few years. Many people who would not use them at all four or five years ago buy them to-day at good prices, not only for pies for present need, but for preserves, etc., for Winter and early spring use. This is the result of supplying the market with larger and better varieties, which have, when cooked, a more delicious flavor than the small wild or thorn-covered berries of years ago. In the spring of 1886, from two rows of bushes, each 110 feet long, containing 28 bushes, or bunches of bushes, I harvested 14 bushels of gooseberries, that sold for $2 and $2.50 per bushel in Cincinnati. In 1887 the same bushes produced only half a crop, but an advance in price of from 50 to 75 cents per bushel was noted. Last year, from the same two rows, I gathered 19¾ bushels, 16 bushels of which were shipped to Cincinnati and sold for an average of $3.50 per bushel. Picking, packages, express charges and commission amounted to $1.35 per bushel, leaving $2.15 per bushel net cash, or $34.40 net for the shipment. The remainder of the crop was sold and used at home, and brought from $2.40 to $3.20 per bushel net, thus giving me over $40 for the entire crop, or at the rate of $1400 net per acre. As yet no worms, bugs or any kind of insect have attacked the bushes or the berries, and they can thus be relied upon as an easily-made and reliable crop.

B. L. FERRIS, Morgan Co., Tenn.

Farmers Wanted in Southern Florida.

I have often wondered why more young farmers do not come to Florida and settle. This (De Soto) is a farmers' as well as a cattle men's county. No epidemic has ever visited us. We have railroad as well as water transportation. Steamers make regular trips from New Orleans to Charlotte Harbor; so we get our corn, oats, bacon, flour and other Western products nearly as cheap as you do in the North. I have called this a farmers' county, yet we import corn and bacon. Why? Simply because we want farmers in every sense of the word. We have a few farmers who produce about thirty bushels an acre, and corn is worth now one dollar per bushel. Can a Western farmer do better? Of course every one who comes to Southern Florida wants his grove of oranges, lemons, bananas, a few pineapples, etc., but corn, rice, sugar cane, sweet potatoes, Irish potatoes, and in winter all kinds of "truck" are quite as profitable. I would not advise young men to join the so-called colonies formed in the North. Let them come South, or let them form a colony of their own and send a man South and make their own selections of the very best land they can find. Florida lands are not like Western lands, all of the same grade for sections. In the same forty-acre tract in this State I have seen good, poor and worthless land, and this is one of the reasons that locating colonies always proves unsatisfactory. Lands are still very reasonable and can be had on time or for cash.

JOHN CROSS, De Soto Co., Fla.

The Outlook in Texas.

The entire State of Texas was visited by abundant rains last year. In fact, there was an excess of rainfall in some parts of the State, and the cotton crop suffered somewhat thereby. Cattle are all in admirable condition, but prices are low, except for those which are killed by railroads. The horns are growing shorter with each generation, in consequence of grading up with Shorthorns, Herefords and other improved breeds.

C. E. HENRY, Dallas Co., Texas.

Wonders of the Plateau Country.

There is a region in the heart of the Great West so wonderfully different and distinct from all the rest of the western portion of the continent that it has been named the Plateau country. It embraces a large portion of Southern Utah, and contains the wildest scenery of the grand canyon of the Colorado river, but some of its most striking features are in Northern New Mexico and Arizona. The Navajoe Indian reservation is about the center of the region, so that our readers may easily locate it on an ordinary map. Perhaps the most striking characteristics of the region are seen about Mount Taylor, in Northwestern New Mexico—a solitary volcanic mountain about sixty miles west of the Rio Grande river—and a strange, barren, volcanic region stretches away from Mount Taylor to the south. This table land is called *mesa*—a broad, flat surface of high land, which may be more or less broken or hilly, but terminates in abrupt cliffs. As Capt. C. E. Dutton describes it in the United States geological survey: "The wide expanses of the featureless plains, the far-off summits of giant cliffs, resplendent with rainbow colors, the flat crest lines dropping in vertical palisades, the naked strata lined off at their partings, the bright yellowish, or ashy soil, the brilliant sunlight and torrid heat, the blue haze of the atmosphere, like an ethereal veil between us and the surrounding objects—all these are the true characteristics of the Plateau country." This region is marvelously interesting to the geologist: the wonderful formations and arrangements of the various strata of rocks and soil being seldom, if ever, found in other parts of the country. The sandy shales are filled with petrified wood. There is more of such wood than of living trees in all the southern Plateau country. It is a barren waste, affording over vast areas neither range for stock nor land for tillage, although some of the valleys possess both. Mount Taylor itself rises some three thousand feet above the *mesa*, which is dotted with the vents of volcanoes long extinct, and cones of volcanic cinders.

Western Oregon.

Lane County extends from the Pacific ocean easterly to the Cascade mountains, a distance of 120 miles and covers an area of 120 townships. Fully two-thirds of this great area is capable of cultivation, and not more than one-third of it is occupied. The population, which is now about 14,000, could with advantage be multiplied many times. Most of the county is rough and mountainous, but even its highest points are available for pasturage, which is green and good the whole year through. Hops and wheat are the chief products. Wool is grown, but not in such quantity as would be expected in a country so well adapted to sheep. The opportunities for enterprise in this line are fine. Good sheep ranches may be bought at a low price, and the outside range, to be had for nothing, is as wide as could be desired. All the land is comparatively cheap, and in great supply, while educational and other growths of civilization have long been established. Lane county offers a field for more varied industry than any other of the western Oregon counties. The grain farmer, the stock raiser, the hop grower, the lumberman, the dairyman and a score of others find the conditions for their different occupations at hand, while the comparative cheapness of land, its character and a climate more genial than that of the northern counties are potent inducements.

A. C. WALLACE.

Progress in Arkansas.

We believe in reducing the area of cotton and having more grass and stock. But the climate of this State is so widely diversified that it is absolutely essential that we try a new departure before advising it. The State Experiment Station has therefore put a whole farm into different varieties of grasses this fall in conjunction with the White River Stock Breeders' Association, to see which will succeed best. This experiment is being made at Newport, where totally different conditions prevail from those up here in the mountains where the central station is located. In the south and southwestern portions of the State cattle suffer from fever, and it is necessary that we find out which breeds will stand the climate best. Northwestern Arkansas is destined to become a great fruit and grain-producing country, with a large stock interest. Already everything is tending that way. We do not grow any cattle in this section, the attention of farmers having already been drawn largely to fruit, and now they are turning to improved breeds of stock. South of us everything is cotton, and has been for years.

A. E. MENKE, Director Arkansas Exp. Station.

Bees in the Spring.

When the first warm, spring-like days arrive the bees which have wintered in chaff hives upon their summer stands require immediate attention. The chaff cushions, if damp, should be turned over and exposed to the sunshine to dry thoroughly, and repacked at night. If there is any lack of food it should be supplied in the form of bee candy, made by boiling pure white sugar in water until it is ready to granulate; then pour it into a shallow dish to cool. This is the only form in which artificial food can safely be given to bees until settled warm weather comes. Sirup is likely to produce dysentery if fed during cold weather. If any colony shows signs of this disease it should be put in a clean hive, on dry combs, and kept on a diet of candy. Even in colonies which have plenty of surplus honey to carry them through until spring opens, it is well to feed candy, as it stimulates them to early brood. In warm days, when the bees fly freely, the hives should be thoroughly ventilated. Bees which have been wintered in a cellar or cave should be left undisturbed until it is time to place them on their summer stands, unless they are short of food, in which case supply the candy.

Recent Catalogues.

FROM SEEDSMEN, NURSERYMEN, ETC.

O. H. Alexander, Charlotte, Vt.: Price list of novelties, cereals and potatoes.

M. Crawford & Son, Cuyahoga Falls, Ohio: Descriptive catalogue of strawberries, with valuable directions for their culture.

Henry A. Dreer, Philadelphia, Pa.: Descriptive catalogue of vegetable, agricultural and flower seeds. Also roses, hardy herbaceous plants, greenhouse plants, ornamental shrubs and trees, small fruits, etc. This is one of the most elegant and tastefully gotten up catalogues of the season, containing many promising novelties.

J. A. Everett & Co., Indianapolis, Ind.: Catalogue of vegetable, flower and field seeds, abundantly illustrated.

I. V. Faust, Philadelphia, Pa.: Catalogue of vegetable, field and flower seeds. A large list of promising novelties. This house also issues a neat and convenient office calendar.

Frank Ford and Sons, Ravenna, Ohio: Catalogue of seeds for the garden and farm; potatoes for such a specialty. A very large list of the best old and new varieties.

John Gardiner, Philadelphia, Pa.: Illustrated and descriptive catalogue of seeds in general, also ornamental plants, etc. A large list of novelties.

Edward Gillett, Southwick, Mass.: Catalogue of North American wild flowers, shrubs, climbers, etc.

James J. H. Gregory, Marblehead, Mass.: Illustrated and descriptive catalogue of garden, field and flower seeds. A fine colored plate of the new Gregory's Hard Head Cabbage and many other new vegetables catalogued for the first time.

Joseph Harris Seed Co., Rochester, N. Y.: Illustrated and descriptive catalogue of vegetable and flower seeds, also small fruits and fruit trees. A very carefully prepared pamphlet giving especial cultural directions for all the important kinds.

R. D. Hawley & Co., Hartford, Conn.: Illustrated and descriptive catalogue of vegetable and flower seeds, implements, etc. Several promising varieties.

Peter Henderson & Co., New York: The catalogues of this house increase every year in size and attractiveness. The one before us is no exception to the rule. It is a very large and lavishly gotten up pamphlet, giving descriptions and illustrations of seeds, plants, implements, fertilizers, in fact everything for the garden. The most valuable novelties of the season are illustrated on handsomely colored plates.

Higganum Mfg. Corp., New York: Illustrated and descriptive catalogue of vegetable, field and flower seeds, also small fruits, fertilizers, implements, etc. Pure first-class agricultural seeds a specialty.

F. H. Horsford & Co., Charlotte, Vt.: Circular of Horsford's Prelude Tomato, which was awarded a first-class certificate by the Royal Horticultural Society of England.

Iowa Seed Co., Des Moines, Iowa: Catalogue of vegetable and flower seeds, also plants, bulbs, potatoes, etc.

George W. P. Jerrard, Caribou, Me.: Illustrated catalogue of seed potatoes, also garden seeds. Several novelties.

D. Landreth & Sons, Philadelphia, Pa.: Catalogue of specialties in vegetable garden seeds and in the field. The catalogue of this oldest of all American seed houses has an introductory of several plates reproduced directly from nature. The monthly calendars are a valuable feature of it.

S. F. Leonard, Chicago, Ill.: A descriptive and illustrated catalogue of garden, flower and field seeds. A large list of novelties.

William Henry Maule, Philadelphia, Pa.: A lavishly illustrated catalogue of garden, field and flower seeds, also live stock and poultry.

J. A. Moody, Youngstown, Ohio: Catalogue of seeds in general.

Nanz & Neuner, Louisville, Ky: Illustrated and descriptive catalogue of roses, flowering and ornamental plants for in- and out-door culture. Also fruit and ornamental trees, etc. The Tidal Wave and Geneva carnations specialties.

Northrup, Braslan & Goodwin, Minneapolis, Minn.: A catalogue of Northern grown seeds. A large and choice collection, specially adapted to northern climates.

James Vick, seedsman, Rochester, N. Y.: Vick's Floral Guide. A very large, remarkably handsome and artistically gotten up catalogue, containing descriptions and illustrations of all the best flowers and vegetables, together with instructions for sowing, transplanting and taking care of the garden conservatory. The pamphlet is embellished with several very handsome colored plates, and a frontispiece giving fine portraits of the late James Vick, and his three sons who now do the business, will be especially acceptable to the legions of their friends.

W. W. Rawson & Co., Boston, Mass.: Illustrated catalogue and hand-book of vegetable, flower and field seeds. Amply illustrated and embellished with a handsome cover.

F. W. Ritter, Jr., Dayton, Ohio: Catalogue of vegetable, flower and field seeds. Several novelties.

J. B. Root & Co., Rockford, Ill.: Garden manual and illustrated catalogue of vegetable and flower seeds, also ornamental and flowering shrub plants. A specially introductory form of northern grown seeds.

Storrs & Harrison, Painesville, Ohio: A large handsome catalogue, illustrative and descriptive of vegetable and flower seeds. Also a general collection of plants and bulbs, hardy ornamental shrubs and plants, fruit trees, grapevines, small fruits, etc. This is one of the most complete and choice collections to be found anywhere.

Vaughn's Seed Store, Chicago, Ill.: A large, descriptive and illustrated catalogue of flower, vegetable and field seeds, bulbs and hardy plants, shrubs and small fruits. Several very promising novelties. A remarkably tasteful cover.

Webb & Sons, Wordsley, Stourbridge, England: Catalogue of vegetable and flower seeds, potatoes, bulbs, culinary roots, etc. Several colored plates of the leading novelties.

Samuel Wilson, Mechanicsville, Pa.: Illustrated and descriptive catalogue of vegetable, field and flower seeds. Also small fruits, grapevines, etc. The Mexican Honey plant and the Northern Spy potato specialties.

Young & Elliot, New York: Catalogue of flower and vegetable seeds, also plants, small fruits, fruit trees, etc. Many colored illustrations of popular flowers.

Schlegel & Fottler, Boston, Mass.: Annual catalogue of seeds, plants, etc. The "Neesima" collection of imported Japanese chrysanthemums a specialty.

T. J. Dwyer, Cornwall, N. Y.: Illustrated and descriptive catalogue of Orange County Nursery for 1889. Tested varieties of fruits a specialty.

Robert C. Reeves, New York: Descriptive catalogue of garden, field and flower seeds.

L. W. Goodell, Dwight, Mass.: Catalogue of flower and vegetable seeds. Rare and choice flower seeds a specialty.

Hugo Beyer, New London, Iowa: Annual catalogue of warranted garden and flower seeds.

Alfred Bridgeman, New York: Annual descriptive catalogue of vegetable, grass and flower seeds, garden tools, etc.

MISCELLANEOUS.

Mapes Formula and Peruvian Guano Co., New York: Catalogues of the renowned Mapes manures, giving descriptions and directions for the use of the various complete and special manures together with detailed descriptions of the methods pursued by those who have raised some of the largest yields of various crops on record. Every farmer and gardener ought to send for this circular whether he intends to buy fertilizers or not.

Moline, Milburn & Stoddard Co., Minneapolis, Minn.: A catalogue of the many and various implements manufactured by this company, such as plows of all kinds and for all purposes, Harris's cultivators, grain drills, mowers, reapers, horse rakes, wagons, etc. This is one of the largest houses of the kind in the world, employing from five hundred to six hundred men and turning out about one hundred thousand finished implements per annum.

Peerless Reaper Co., Canton, Ohio: A very neat circular describing and illustrating the Peerless mowers, reapers and binders.

Whitman Agricultural Co., St. Louis, Mo.: Circular of the new Tornado broadcast seed sower.

L. S. Fitch, Oakwood, Ind.: Catalogue of Clydesdale, Cleveland Bay, and English Shire horses, imported and bred by the Door Prairie Live Stock Association, Door Village, Ind.

Joseph Bosler, Jr., Carlisle, Pa.: Catalogue and price-list of thoroughbred poultry.

B. J. Treacy, Lexington, Ky.: Catalogue of fashionably bred trotting stock, at Ashland Park stock farm.

Walter A. Wood, Hoosac Falls, N. Y.: A unique and attractive catalogue of the various harvesting machines manufactured by this house. In addition to the descriptions of the various implements, interesting statistics and matters of interest to farmers are given. It is stated that 726,510 of these machines have been made and sold.

Mrs. Ida M. Smith, Stony Brook, Suffolk Co., N. Y.: Illustrated price list of Stony Brook poultry yards.

Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass.: Descriptive and illustrated catalogue of agricultural implements.

Childs & Jones, Utica, N. Y.: Catalogue of cheese factory, creamery and dairy apparatus and supplies.

Clipping Machine Co., New York: Descriptive circular of Anderson's patent horse clipping machine.

Charles M. Griffin, Shelter Island, New York: Circular of light Brahmas, Plymouth Rock and Wyandotte fowls.

Matters of Business.

A Good Remedy.—Scott's Emulsion is becoming widely known in the treatment of lung, rheumatic and scrofulous ailments, and is used in their practice by many well-known physicians.

A Catalogue Worth Getting.—We would call the attention of our readers to the advertisement of Morehouse & Annis, seedsmen, Rochester, N. Y. Mr. Morehouse was for many years general manager for Hiram Sibley & Co., the well known Rochester seedsmen. Be sure to get their catalogue.

Thompson's Wheelbarrow Grass-Seeder.—This is a cheap and useful device for sowing grass and clover seed, and possesses many advantages. It weighs only forty pounds; it will do its work in a windy day as well as in a calm one, and can be set to sow any desired quantity of seed per acre. It takes a wide sweep, and will seed from twenty-five to forty acres per day.

Every Farmer His Own Blacksmith.—The Holt Manufacturing Co., Cleveland, O., is engrafting itself into the good will of the farming community by putting on the market a forge and kit of blacksmith tools by which a handy farmer can do his own blacksmithing. The entire outfit is very cheap, and is just what the farmer has been demanding for years. The Holt Manufacturing Co. will send circulars with full particulars, to all who write.

The Poor Cow Must Go.—Prof. F. G. Short, of the Wisconsin Experiment Station, has devised an apparatus for testing the butter value of milk, thus enabling any man or woman to ascertain the real value of any cow to a dairy. It is the cow which "eats her head off" which you should send to the butcher; it is the one which gives the richest milk which you wish to retain. A circular sent out by Cornish, Curtis & Greene, Fort Atkinson, Wis., furnishes particulars about this tester.

The Aspinwall Potato Planter.—We have received numerous inquiries concerning the machine named above, and to all of them we can answer without hesitation that it is a genuinely good and useful invention. In the simple matter of planting it is as much of an improvement over hand planting as is the check-sower for corn. Besides this, it has an attachment for distributing fertilizers at the same time with planting. We believe it has no competitor in the market.

The Acme Pulverizing Harrow.—In its present improved form, the Acme is unquestionably one of the most satisfactory implements in the world. It is a universal pulverizer, and goes farther toward furnishing a farmer with an outfit than any other tool in the market. The Acme cuts and cultivates the entire surface of the ground, leaving no hard, uncultivated ridges. The front row of coulters may be set to overlap the rear row, so that every particle of ground is worked over.

Use the Best Paints.—A first-class paint, made from pure materials, should last from five to eight years, but the adulterated articles will need replacing within from two to three years. The cost of applying is greater than that of the materials. This should be taken into consideration in estimating the comparative cost of paints. The Asbestos Liquid Paints of the H. W. Johns' Manufacturing Co., 87 Maiden Lane, New York, have stood the test of time and proved to be among the best. Sample cards containing a complete line of their colors are sent on application.

OUR BASKET.

Strawberry Leaf-Destroying Insects.—J. J. Davis, Warren Co., N. J.: The insects which are destroying your strawberry plants by eating the leaves are shown, by the specimens sent, to be the larvæ of a small fly, known under the scientific name of *Emphytus maculatus*. The worms are of a yellowish-green color about half an inch long, and when feeding are usually curled up, with the extremity of the body hanging down. The parent fly appears in this latitude early in May and is of black color with two rows of transverse whitish spots upon the abdomen. The female deposits her eggs on the leaf stalks, first puncturing them by means of a saw-like instrument with which she is provided, and thrusting her eggs into the wound thus made. The eggs hatch in a few days and the young grubs immediately attack the leaves. When the grubs are fully grown they descend into the ground, roll themselves up in a slender cocoon, the pupa remaining in it until the following spring. Dusting the leaves when wet with dew with dry caustic lime is the best method of destroying this insect with which we are acquainted; although you say that you have tried lime and various other insecticides without any apparent beneficial results. This species of strawberry worm has been quite abundant and destructive to strawberry plants in some of our Western States for many years, but we have not heard much about it heretofore in the Eastern, although we have seen occasional specimens in old plantations. New plantations, and land where strawberries have not been grown for several years previous, are rarely attacked by this insect.

Leaky Tin Roofs.—Farmers who live remote from any place where there is a tinsmith are often troubled by leaks in tin roofs, or eave troughs. Any farmer can repair them and make them stronger than before. Find the leak, and apply a good coat of rather thick paint; put on a piece of old bagging or coarse muslin, then a second coat of paint, rubbing it well in, and smoothly. Then cover with a piece of tin, nailing it down tightly, close to the edge, using large-headed tacks; those known as 24 or 30-oz. Swede's iron tacks are best. Then give another coat of paint, and the leak is not only repaired, but that part will last much longer than the rest. Old fruit cans are just the thing for the purpose; set them on top of a hot stove till the solder is melted, and then flatten them out.

A Case for Investigation.—L. S. Benham, Antrim Co., Mich.: A cow with lumps on the side of the jaw and on the under side of the neck, should be isolated, and a veterinarian called to decide whether or not she has tuberculosis. Such a cow's milk should not be used for food.

Wayside Flowers.—E. M. Ingersoll, Vermilion Co., Ill., writes us that he cultivates many wild flowers, and finds them greatly improved by cultivation. Some kinds are equal if not superior to expensive exotics.

Without a Rival.—I have been a reader of the AMERICAN AGRICULTURIST for many years, and I think it is without a rival. CHAS. AMARAND, Pa.

Growing Peanuts.—W. Fuhrman, San Diego Co., Cal.: Peanut culture is rapidly extending throughout the Southern States; this is a profitable crop where the conditions are favorable. Peanuts do best in a light sandy soil. The stems have to be covered up when in flower as the seeds ripen only under ground. Any one who intends to raise peanuts should have "Jones's Peanut Plant;" price, 50 cents.

Raising Celery.—Rev. R. Heber Murphy, Calvert Co., Md., desires information about raising a small quantity of celery for family use with the least possible expense. With the New Dwarf and Self Blanching varieties, the labor of raising celery is reduced to a minimum. The ground is made as rich as possible, the plants are set in rows three feet apart and about six inches in the row. They are generally cultivated like any other crop. Hill up when the weather gets cold, or a few weeks before the celery is wanted for use.

Younger and Brighter than Ever.—B. S. Hoxie, Secretary of the Wisconsin State Horticultural Society, writes us: "Your valuable paper comes with its regular visits to this office as an old friend, but it is not old, for every year it seems younger and brighter than ever."

Bush Lima Bean.—O. H. Alexander, Chittenden Co., Vt., writes us that this new variety yields one hundred fold in a garden of rich soil, but only thirty fold in the field under ordinary circumstances.

Goats for Fleece.—S. C. Sides, Forsyth Co., N. C.: The Angora is the best kind of goat to raise in your region for the fleece. The white goats you speak of are undoubtedly Angoras.

Manure from Mushroom Beds.—To the inquiry whether mushrooms impoverish the manure in the beds, William Falconer, Long Island, N. Y., answers: I have never had the least evidence in the affirmative, and I don't believe they do. The manure used is of the best and richest kind to begin with, and the manipulation it now has undergone has rotted and fined it, and rendered it of the most available nature for food for young and tender plants, and excellent for enriching ground for seed beds.

Better than Ever.—I can truthfully say that I like the AMERICAN AGRICULTURIST better than ever. It cannot come often enough.
MRS. L. M. DOWNS, Knox Co., Ill.

Treatment of Grapevine Diseases.—The experiments made in 1888 in the treatment of vine diseases fully demonstrated that the copper compounds, especially the Bordeaux mixture, would prevent black-rot. A circular indicating a definite line of treatment for this malady has been prepared by B. T. Galloway, Chief of the Section of Vegetable Pathology in the Department of Agriculture at Washington, D. C. It will be sent on application to all grape-growers and others interested in fruit culture.

More About Brazilian Corn.—Robert S. Taylor, Washington Co., Ark., gives his experience with this crop as follows: I planted a small quantity about the 15th of last May. It made a very rapid, luxuriant growth, sending out a prodigious number of suckers. When the tassels began to appear, a drought set in which lasted three or four weeks. The corn was injured, but rain came, the suckers were removed, and every remaining stalk produced one or two ears. The bread made from the meal is white, but we think not at all superior in flavor to that made from ordinary corn meal. From the abundance of suckers produced it would seem to be a profitable crop for fodder or the silo. I hope to make a more extensive trial of it this year. William Moore, Preble Co., Ohio, writes us that he has tried Brazilian flour corn for two years, and finds it will not ripen well in his locality, and will not make bread or mush fit to eat.

Building a Greenhouse.—John S. Bler intends to build "the beginning" of a greenhouse, 14x30, to to be subsequently enlarged, and asks how it may be done economically. We would advise him to begin with one 20x22; that is, 20 feet wide inside and 22 feet long, which would be better and cheaper. The former would inclose 420 square feet, and the latter 440. The walls should be built of brick, and an eight inch wall will be sufficiently strong if properly laid up. The sill should be 3x8, the rafters 2x6, the purlins ½x3, the sash bars ½x1, and the plate 3x6. The side sashes should be about three feet high. The ridge-pole should be 2x7½. The sash bars must by far enough apart to accommodate the size of glass to be used. Economical sizes are 8x10 and 10x12, the former being the better size for a roof slightly curved. Second quality French glass is good enough. The roof should have a pitch of 32° to 34° to the horizon. Make the side tables or "benches" three feet six inches wide, the middle table eight feet wide, and the walk two feet six inches wide. The top of the side table should be on a line with the sill of the house. The middle table may be from six to twelve inches higher. The best material is Georgia pine, but not the common Southern pine, which is not as good as well-seasoned white pine. The pipes should not be sunk or buried, but stand a few inches above the floor level, and the floor level should be from 15 to 18 inches below the lower edge of the sill. The boiler should be in a vault outside of the house. A double pitch house is better and more useful than a three-quarter pitch or a lean-to, and can be built cheaper unless built against a wall already standing. A cheaper house than this can be built so far as first cost is concerned, but it will be by no means so "cheap and profitable" in the end. The money spent annually for repairs on a "cheap" house would be much more economically applied in building a good one. The cost may be increased at pleasure by the addition of foot boards, moldings, cresting, finials, etc., and a few conveniences.

Clearing Out Curculios.—E. B. Estes, Kings Co., N. Y., writes us that he effectually protects his plum trees from the attacks of the curculio by scattering copperas freely under the trees as far out as the limbs extend.

Points of a Good Jack.—Thomas C. Galloway, Ada Co., Idaho: If the male ass is needed as a sire for small donkeys, the Mexican burro is the best; if to breed mules, the Spanish ass is a good sire for medium size mules, such as are constantly sent to the West Indies to work on the plantations. If the project of the breeder be to produce large mules, suited for heavy draught, like the animals required by British buyers in case of African wars, to haul field pieces and army stores, then the Maltese ass or the Poitiers ass is required. The attributes of the asinine family vary very little from those of the equine family. A well put together body, a short, strong back, a light head and intelligent countenance, bright, prominent eyes, and strong, flat knees, with a short, stout cannon bone, clean cut necks, and an even gait are all necessary. Avoid a lack of courage, a sullen aspect and a hanging under lip.

Frothy Cream.—A young lady subscriber, of Somerset Co., Md., describes as follows her method of treating cream in winter, when it froths in the churn, and persistently refuses to "come" with any amount of churning: Set the cream over the fire in a kettle with an equal amount of warm water, and let it boil until the oily part rises to the surface. Then set away in a cool place and let it stand until it is cold; skim off the top and stir vigorously in with a spoon until it becomes butter, which salt and work in the usual way. It will lack "grain" and keeping qualities, but is very good for present use.

Wisconsin Horticulture.—Prof. E. S. Goff, for several years horticulturist at the New York State Experiment Station, and a valued contributor to the AMERICAN AGRICULTURIST, has been appointed to the Chair of Horticulture in the University of Wisconsin. A better appointment could hardly have been made, as Mr. Goff is among the foremost practical as well as scientific horticulturists of the country.

A Non-Patented Ant-Trap.—James E. Morgan, Worcester Co., Mass., writes us that he has discovered the best ant-trap in existence. He fastens a small piece of citron to the inside of a paper bag, and places the bag on the shelf where the ants abound. In a short time a great number of ants will have collected in the bag, when by holding and shaking the bag over a fire they will readily drop out and thus be destroyed. The trap is then ready for another haul.

Protection Against Freezing in Cellars.—W. H. McNulty, Essex Co., Mass., writes us that he has repeatedly kept large quantities of potatoes and vegetables from freezing by keeping three or four kerosene lamps burning in the cellar when the thermometer fell below the freezing point.

Herd's Grass.—F. T. Fisher, Warren Co., Tenn.: In New England and New York, Timothy (*Phleum pratense*) is also called Herd's Grass and sometimes Meadow Cat's Tail. The name of Timothy was given to this grass after Timothy Hanson of Maryland, who introduced it from England at the beginning of the last century. Afterward the same grass was grown by a man named Herd in New

Hampshire, and it became known in that locality by the name of Herd's Grass. What is known as Herd's Grass in the South (*Agrostis vulgaris*) is known at the North as Red Top. It would be well if the name Herd's Grass were dropped in favor of the more correct names of Timothy and Red Top.

The Northwest in Earnest.—I will do anything I can to insure the success of the most commendable AMERICAN AGRICULTURIST Prize Crop Competition. I have been a subscriber and reader of the AMERICAN AGRICULTURIST for many years, and have always regarded it as the most satisfactory agricultural publication for general information in this country.

EDWARD D. PORTER, Director Minnesota Agricultural Experiment Station.

Andrew J. Caywood, the veteran horticulturist, died at Kingston, N. Y., Jan. 14th. He was born in Orange county in 1819, and passed all his life in that and the adjoining counties. His whole life was devoted to horticultural pursuits to which he brought an enthusiasm which came from love of the work. He originated the "Walter," "Dutchess," "Poughkeepsie Red," and "Ulster" grapes, the "Minnewaska" blackberry, and the "Marlboro" raspberry. If some of his new varieties fell short of the practical success he hoped for, it was not through any lack of patient, conscientious effort on his part to attain the highest excellence. He was a member of the American Pomological Society from its first organization, and in other ways identified himself with horticultural progress.

Making a Pond.—F. H. Read, Monmouth Co., N. J., asks for the best way to make a small pond. If he will look on Page 60 of the AMERICAN AGRICULTURIST for February, he will find an illustrated article which will doubtless furnish the information he desires.

A Wet Meadow.—Joseph F. Witmer, Lancaster Co., Pa., writes us that he has a meadow, subject to occasional flooding which kills out red clover, and desires information as to the best kinds of grasses for such a location. Foul-meadow grass (*Poa serotina*), redtop (*Agrostis vulgaris*), and Alsike clover seem to hold their own in such situations, and yield large crops of good forage. One bushel (fourteen pounds) of each of the grasses, and six pounds of Alsike clover seed per acre would be abundant.

The Corn Show at Paris.—Measures are on foot for making a striking display of Indian corn at the Paris Exposition which is to open May 5th and continue until October 25th. A pavilion, graceful and airy in style, is to be constructed entirely of the plants and ears of the great American cereal. The roof, columns and chimneys will be built of corn fodder, and the interior and exterior of the pavilion will be entirely covered with corn stalks and ears. The red, white and golden yellow of the ears, the brown of the sorghum, and the dead green of the dried corn blades will afford a pleasing variety of shades. Ornamental features will be introduced, among which will be mosaics of colored corn, producing an effect similar to the marble mosaics of Pompeii. An American kitchen will be established in which are to be cooked on American ranges all the known food preparations from Indian corn, which are to be dispensed free. The aim is to demonstrate to the Old World visitors the value of Indian corn as a material for human food. The idea originated with Col. Charles J. Murphy, of the New York Corn Exchange, who has been designated by the United States Agricultural Department to look after the special corn exhibit at the Exhibition.

Carbonate of Ammonia in Bread.—H. O. Perkins, Lane Co., Ore., asks how bread is made with carbonate of ammonia, if bread so made is wholesome, and if it requires an acid to make it raise. Bakers often use carbonate of ammonia in cake, but we have never known it used in bread. Indeed, from the condition of extreme "shortness" or crumbly character of the cakes, we should not think it advisable. We know of but one way to make good bread, and that is by the use of good yeast. The action of carbonate of ammonia is different from that of carbonate of soda. It "raises" or makes porous by the liberation of carbonic acid gas which, in escaping through the dough, fills it with cavities and makes it spongy. The carbonate of ammonia, when heated, is entirely volatile; it requires no acid. It is dissolved in water, and the cake mixed with it. When heated in baking, the carbonate becomes a vapor, which, in escaping, fills the cake with very fine pores, and none of the material is left in the cake. If it were desirable in bread, there could be no doubt as to its wholesomeness, but good, sweet toothsome bread can only be made by the fermentation of the flour, and that can only be effected by the use of yeast.

Better and Better.—We are all very much interested in the AMERICAN AGRICULTURIST. It grows better every year, especially in the number and quality of illustrations. We think it cannot be excelled as a farm journal. I am also highly pleased with the American Agriculturist Cyclopedia. It certainly contains a great amount of correct information within a small compass.

PETER F. UNANGST.

The Fertilizer Taxes in the Southern States, editorially considered in the AMERICAN AGRICULTURIST for February, have already been attacked by the great farmers' organization in that section, the Alliance. The farmers there echo the sentiments expressed by the AMERICAN AGRICULTURIST, as will be inferred from the following resolution adopted by the Wilson County Alliance of North Carolina, which is typical of the sentiments among farmers generally: "Resolved, That we regard the tax of five hundred dollars on each brand of fertilizers sold in the State as class legislation in that it is a direct tax on the agricultural interest of the State. We therefore recommend that all commercial fertilizers and chemicals shipped into the State for agricultural purposes be exempt from taxation."

Disposal of House Slops.—Have trees and grass and flowers around the house to eat up the slops and dish-water thrown out and emptied here and there on the premises, and to render harmless all these substances that in their decay might endanger people's health. This plan is better than to have drains or sewers as usually constructed in and near farm homes. There is a safer way, however, of dealing with house slops, washing suds and liquids of that sort. Keep a barrel on wheels near the kitchen door as a fitting receptacle for all such substances, and empty its contents from time to time upon the garden, on meadows, or upon the compost heap.

Raising Pecan Nuts.—A. F. Celestin, St. Tammany Parish, La.: If you fear the uprooting of transplanted pecan nut trees, owing to the loss of the tap-root, you can plant the nuts where the trees are to remain and grow permanently. But we should risk the transplanted trees, and raise them in nursery rows until three or four feet high and then transplant into the orchard. At first sow the nuts rather thickly, or two or three inches apart in shallow drills. When the little trees are one or two years old transplant them into nursery rows, placing the seedlings about one foot apart and the rows four feet, in order to allow room for cultivation with a horse or mule. When large enough the trees may be taken up carefully and set in the pecan grove or orchard.

Maple Sugar Making.—W. K. Terry, Bradford Co., Pa.: In making maple sugar strict cleanliness should be observed from gathering the sap until the final process is complete. The sap as gathered should be strained to remove all foreign matter that may have fallen in or have been blown in by the wind. In boiling skim frequently, but if ashes or sand fall into the kettles or evaporating pans, skimming will not remove such heavy substances, for these will fall to the bottom and must be removed from the thin and cooled sirup before it becomes thick enough for table use, or for granulation. The moderately thin sirup should be strained through rather closely woven woolen cloth to remove the foreign matter that does not rise to the top where it can be skimmed off. After the straining is completed return the clean sirup to the kettles and reduce to the required consistency. If it is to be made into sugar the sirup should be boiled slowly toward the close of the process to avoid scorching, and should be tested every few minutes by taking out a spoonful of the hot sirup and allowing it to cool, when rapid granulation will follow. Small cakes are best for the retail trade, but much of the maple sugar sold in our markets is re-melted, refined and adulterated with common cane sugar. If too highly refined it loses its peculiar maple flavor, for which it is mostly valued. For fuller directions see the AMERICAN AGRICULTURIST of January and February, 1888.

Artificial Ivory.—A. Holliday, Adams Co., Wis.: Imitation Ivory is made of various compounds and by various processes, and no less than twenty-two patents had been issued in this country to inventors of artificial ivory prior to 1870. India rubber, lime, sulphur, shellac, camphor, ivory-dust, gelatine, paper pulp, plaster of Paris, potatoes and other materials enter into these imitation ivory compounds. We do not know of any book which would give you the information desired for making imitation ivory from potatoes, but copies of the patents referred to can be obtained at the Patent Office in Washington.

Making Grape Cuttings.—G. D. Ellis, Jefferson Co., Ky.: In making grape cuttings for planting in the open air, the most common practice is to save the canes pruned off in fall or winter for this purpose. The canes are cut up into lengths of five to eight inches, varying somewhat according to the habit of growth of the canes from which the cuttings are made. If the wood is long-jointed; that is, five or six inches between buds, then cuttings with two buds on each are sufficient, one at the base and one near the top. The canes are cut square across just below a bud, and at the top about one inch above and in a sloping direction. These cuttings should then be tied in small bundles and stored in moist sand or moss until wanted for planting out in spring, or they may be buried below frost in the open ground. In making cuttings of short-jointed canes, three or four buds may be found on cuttings six to eight inches in length; it is not necessary to have the cuttings of this length, although they are more convenient to handle in tying up and planting than if only two or three inches long. But for outdoor propagation, the cuttings should have at least two buds on each. Under glass single bud cuttings are used in preference to longer ones. All the different modes of propagation of the grape are fully described in "Fuller's Grape Culturist," sent post-paid by the Orange Judd Co. on receipt of $1.50.

Plat or Plot.—A correspondent discusses the supposed distinctions between these two words. By referring to our Webster's Unabridged, we find that they are practically the same. There is no better authority than Webster.

Beginning with Poultry.—B. E. D' H., Allegheny Co., Pa.: Begin with poultry in a small way. Do not invest much money until you have learned something from experience. A small piece of ground, a little hen-house and a half-dozen fowls will suffice at first. Do not expect to make your fortune, or even your living, for some time, for no business requires to be managed with more care, skill and shrewdness, and these cannot be acquired in a day. Profit all you can by the experience and especially by the mistakes of others. You can get many useful hints from the AMERICAN AGRICULTURIST, and from a good poultry book like "Profits in Poultry," which the Orange Judd Co. will send to your address, post-paid, on receipt of $1.00.

The Good Natured Percherons.—At Savage & Farnum's Island Home Stock Farm, Grosse Isle, Wayne Co., Mich., there is an instance of the docility and kindness of the Percheron stallion, a trait in which this remarkable breed of horses excels all others. Their Percheron stallion, Pluviose 3,755 (683), and a little Shetland pony stallion, Tom Thumb, live in the same box stall, and one of the most amusing of the many pleasing sights that one witnesses during a day's inspection of this famous stud is to watch the capers and antics of these two stallions. Pluviose weighs about 1,850 pounds and Tom Thumb about 350 pounds, and they will play and roll in the straw and nip each other for hours at a time like a couple of puppies, the big fellow being always very careful not to hurt the little one. Once in a while the Shetland will lose his temper and "go" for Pluviose quite lively, but the sensible Percheron will stand and look at him with an expression as near to a laugh on his face as it is possible for a horse to have, and when the little runt tires himself out with his hard play he will lay down on the straw in the middle of the stall and go to sleep, and Pluviose will move as carefully about the stall to avoid injuring him as a mare would if it were her foal.

AMERICAN AGRICULTURIST
FOUNDED IN 1842

MARCH, 1889.

Sixty-Four Pages.

The AMERICAN AGRICULTURIST goes out to its half-million readers this month with a number which is almost a volume of itself, for it contains no less than sixty-four pages. Never before in the nearly half a century of its existence has it issued a number so large as this, except in November, when its Premium List is annually published as a Supplement to the magazine and paged consecutively with it. In previous years the ordinary issue of the AMERICAN AGRICULTURIST consisted of thirty-six pages, and one of forty or forty-four pages was considered extraordinary. But within the last six months the regular issue has been increased to forty-eight pages, and this number we are now obliged to increase to sixty-four. And we are very glad to be so obliged, for it is the prosperity of the AMERICAN AGRICULTURIST which compels us. The unprecedented demands upon our advertising space would have made large inroads upon the reading matter but for this temporary enlargement; and although the advertisements in the AMERICAN AGRICULTURIST are thoroughly read, especially at this season, we were determined that no part of the paper should suffer because of the crush of advertising and so enlarged the number accordingly. Our subscribers appreciate liberal treatment, and by a continuance of their confidence and esteem we are sure to be rewarded for the heavy outlays made and to be made for the steady improvement of this magazine. Our friends may be certain that neither pains nor expense will be spared to keep the AMERICAN AGRICULTURIST in the proud position it long ago attained as the acknowledged head of the agricultural press of the world.

Buying a Farm.

In buying a farm for a family home, two things are so frequently overlooked and are of so much importance that we would impress them upon the reader. The first is the drainage about the dwelling house. No family can be healthy and happy unless its dwelling is situated on a spot whence the drainage is good. On not a few farms the dwelling has been located where the drainage is very poor and can not be much improved. The person who located the house may not have cared for drainage, or may have thought of greater moment the advantage of a location near a spring, or grove of trees, or something else. No fertility of the land or "bargain" by reason of low price will justify a man putting himself and family in a dwelling from which the drainage is imperfect. Sickness and death, with the attendant suffering and expense, will make the farm a bad bargain, no matter how low the price or fertile the land.

The other thing is the intellectual and moral character of the neighborhood; for no man can afford that he and his family live among unintelligent, immoral people. To no small extent your neighbors will mold the characters of your children; if you would have bright, intelligent, respectable children you must have neighbors of the same sort. In the country we must look to our neighbors for social intercourse; and, unless they are as they should be, we must live like hermits, or associate with people whose companionship is uninteresting while it is harmful. Land in a good neighborhood may cost somewhat more, but it is nevertheless the cheaper. Land where there are not good people, and the good roads, schools, churches and books that these people will have, is always too dear for a wise man to buy. It is also worth while to take care to get near church and school house. One-fourth of a mile further from church and school house means many miles more travel every year for your children, sometimes when the winds are fierce and cold, or the snow is deep; sometimes, also, the children may be kept altogether from school or church for many precious days. These things merit the consideration in buying a new home.

A Great Enterprise.

This is the verdict pronounced on the AMERICAN AGRICULTURIST Prize Crop Competition by farmers in all parts of the country. The spirit of hearty co-operation and cordial welcome for this enterprise is shown everywhere. Perhaps the most remarkable instance is afforded by the South Carolina Department of Agriculture, which offers to duplicate the AMERICAN AGRICULTURIST prize of Five Hundred Dollars in gold for the best acre of corn provided it is taken by a farmer in that State. Missouri has done something in the same direction, and other States have the matter under consideration. Especially do the Southern and Western States recognize the value to their section as an advertisement if they secure any one of our large prizes. The State Experiment Stations are also ready to assist what Professor Levi Stockbridge calls our "herculean and costly job of advancing the farmer many a peg on the right road."

The book for the contestants' report is now ready, and its simplicity, without impairing its thoroughness, is commended on all sides. It is impossible for a contestant to have any difficulty in making out his complete report, as he has only to answer the questions in the blanks provided under each for the purpose. The safeguards erected, so that only those fairly entitled to the prizes will get them, are effective, but so simple as not to be in the least a burden to the practical farmer who competes for the AMERICAN AGRICULTURIST'S unprecedented prizes. We trust that farmers who have not already entered the contest will do so at once, as the earlier they begin their preparations the better. Full particulars will be found in the announcement on Page 160 of the present issue. We hope that many more will join those who have already entered the prize lists. As practical farmers throughout the country all say, the extra yield we obtain by striving for these prizes will alone repay our extra efforts, while each contestant will derive great benefit from his own experience and from the work of other contestants and of the experiment stations' chemical investigations as given in the reports to be published by the AMERICAN AGRICULTURIST.

The Secretary of Agriculture.

Congress has passed and the President has approved the act creating an Executive Department of Agriculture. The act simply provides for this change, and for an Assistant Secretary of Agriculture, both the Secretary and the Assistant Secretary to be appointed by the President "with the advice and consent of the Senate," and to receive the same salaries as similar officials in the other Executive Departments. President Cleveland at the same time nominated Hon. Norman J. Colman to be Secretary of Agriculture. Colonel Colman has been an efficient Commissioner of Agriculture, and this promotion, although for a brief time, is a deserved recognition of his services.

The effort to transfer the Weather Bureau and the Geological Survey to the new Department did not succeed, but the failure was due primarily to lack of time for proper consideration of the changes by the Senate. The friends of the bill preferred to accept the Senate's refusal to incorporate these features in the measure rather than risk its entire defeat in a disagreement so near the close of the Fiftieth Congress. The AMERICAN AGRICULTURIST hopes the Department with its new powers will so demonstrate its usefulness and the proper scope of its work that in due time it may include the Signal Service or at least the Weather Bureau, the General Land Office, the Geological Survey, the Labor Bureau, and the Fish Commission. These great branches will be properly grouped with the Department of Agriculture, as they are most closely allied to our agricultural industries. Under one head, each systematically organized to do the most work without infringing upon or repeating the work of others, they would accomplish far more than at present and at less expense. The results, too, would be more likely to come within the reach of the "common people" if they knew that the information emanating from all these Bureaus could be obtained simply by applying to the Department of Agriculture.

In years gone by we have had Commissioners of Agriculture who were of little service because, notwithstanding certain abilities, they did not possess a knowledge of the everyday farmer. The new Secretary should be National in his views, as quick to recognize the needs of one section as of another, and devoid of sectionalism. Knowing the farmers' wants, the Secretary should have the ability to secure the scientific investigators to conduct the researches required or the executive function to carry out other measures needed. Above all he must be a man of originality, tact, firmness and thorough integrity.

The enlarged Department must be essentially the creation of its leading spirit, profiting by all past experience. The start made in the right direction by Colonel Colman will be largely lost unless his successor gives it a still greater impetus and lays still broader foundations for its enlarged usefulness. The AMERICAN AGRICULTURIST voices the sentiments of the intelligent farmers of the

United States in calling upon President Harrison to appoint a Secretary of Agriculture who will embody this ideal.

State Aid to Agriculture.

The methods pursued by the various States and by the United States for advancing their foundation industry are well summed up in the AMERICAN AGRICULTURIST'S investigation as printed on Page 144 of the present number. The facts may be more readily grasped if summarized and compared as in the statement below:

Column No. 1 shows the total appropriations made for agricultural purposes, the details of which will be found in the full report on Page 144.

Column No. 2 gives the per cent of the total population engaged in agricultural, pursuits according to the national census of 1880.

Column No. 3 shows the number of farms in each State.

Column No. 4 shows the amount of money per farm appropriated in each State for agricultural purposes.

STATES AND TERRITORIES.	1	2	3	4
United States	$2,121,617		4,008,907	$0.53
Alabama	28,000	77.3	135,864	0.21
Arizona	17,500	15.5	767	22.82
Arkansas	35,000	83.2	94,433	.37
California	89,000	21.2	35,934	2.48
Colorado	25,000	12.4	4,506	5.55
Connecticut	45,000	14.0	30,598	1.47
Dakota	32,000	49.2	17,435	1.83
Delaware	500	32.7	8,749	.06
Florida	7,500	53.3	23,438	.32
Georgia	20,000	72.4	138,626	.15
Illinois	69,200	43.3	255,741	.27
Indiana	5,000	52.2	194,013	.03
Iowa	16,000	57.7	185,351	.09
Kansas	50,000	63.9	138,561	.36
Kentucky	25,000	61.7	166,453	.15
Louisiana	10.000	56.7	48,292	.20
Maine	6,400	35.5	64,309	.10
Maryland	6,000	28.0	40,517	.14
Massachusetts	81,000	9.0	38,406	2.11
Michigan	40,000	42.3	154,008	.25
Minnesota	40,000	51.8	92,386	.43
Mississippi	None	89.4	101,772	
Missouri	35,000	51.4	215,576	.18
Nebraska	100,000	59.4	63,387	1.75
New Hampshire	3,000	31.4	32,181	.96
New Jersey	45,000	14.9	34,307	.43
New York	283,424	22.5	241,058	1.17
North Carolina	45,000	75.2	157,609	.29
Ohio	88,000	39.9	247,189	.36
Oregon	15,000	40.3	16,217	.93
Pennsylvania	50,000	20.9	213,542	.23
Rhode Island	10,000	9.3	6,216	1.61
South Carolina	36,000	75.3	93,864	.38
Tennessee	7,000	65.8	165,650	.04
Texas	3,950	68.9	174,184	.02
Vermont	12,000	38.2	35,522	.34
Virginia	10,000	46.9	118,517	.09
Washington Territory	None	65.0	6,529	
West Virginia	None	6.1	62,674	
Wisconsin	68,631	66.5	134,322	.51
Wyoming	7,500	58.5	457	16.41
Total averages	$3,599,222	45.8		

The totals appear large, but they are infinitesimal when compared with the sum of the appropriations for all purposes, or compared with the onerous burden of taxation borne by the farmers of America. Our agriculture really pays the bulk of the aggregate of State taxes, for the farmers' real estate cannot escape taxation by any of the means whereby corporations evade the tax-gatherer. For this reason, and because the progress of agriculture is the measure of a nation's real prosperity, the principle of State aid to agriculture is a sound one. This principle appears to be better recognized in the older States of the East than in the newer West. Massachusetts, Connecticut and New York are conspicuous examples of the intelligent application of fostering care by the State for her agriculture; while Iowa and some of the other almost exclusively agricultural States are equally conspicuous for the lack of recognition of their leading business.

The discussion of this subject, which is cordially invited, will reveal good grounds for criticism, mainly as to the actual returns for the expenditure so graphically presented above. Just as self-help is the best help for farmers as well as for other classes, so the effectiveness of State aid depends very largely upon the men who do the work which the appropriations pay for. They may be faithful and able, and yet lack the knack of presenting their work in such a way as to interest farmers in it and induce them to profit by it. Wisconsin and Connecticut are excellent instances of good work so done that the rank and file of farmers can reap from it practical benefits. And to reach and benefit the everyday farmer is the ultimate object of all this effort.

Can Farmers Afford the Best?

Can the farm provide of its best for the family table and also be profitably conducted on the surplus? This is a question frequently asked, but rarely answered. Too many farms are run on the principle that the best of the produce must be marketed and the residue consumed at home. It is certainly false economy to feed frozen or decaying vegetables to either family or live stock. If a crop has suffered, the first loss is the least; get the bad portions quickly out of the way and guard another year against a like loss. On dairy farms where butter is made at home, no second grade of quality can be pardoned; the competition is now so keen that only top prices remunerate the dairy farmers; therefore the family should have the best butter made in the land. When poultry are bred and fattened for market purposes, the owners should literally feast on fat things. On a poultry farm, lean chickens, starving turkeys and flabby ducks, together with gaunt geese, should be unknown. When spring chickens are worth 50 cents per pound and early ducks fetch 25 and 30 cents per pound, a fat capon worth 20 cents per pound can grace the home table. There is no wisdom in meanness at home, and placing on the market an inferior article, because such is more readily produced. A high standard for everything produced makes home more cheerful and swells the profit at the close of the year. Good land well cultivated, good stock well kept, and the farm home liberally supplied, tend in themselves to enrich the farmers and to advance the widest interests of the community.

Conclusions About Fertilizers.

Such tests as those at the Kentucky and Massachusetts experiment stations, showing the peculiar wants of the soil, are to be encouraged. They teach an important lesson both to farmers and to fertilizer manufacturers. In Kentucky, for instance, where superphosphates containing very little potash are now generally supplied, manufacturers will be inclined to supply more potash in their goods, or furnish special brands rich in potash. It is the duty of the stations, however, to have similar experiments conducted on farms on the different kinds of soils throughout the State. Connecticut has inaugurated a good work in this direction.

One point in which contestants in the AMERICAN AGRICULTURIST Prize Crop Competition are asked to give full information (see Book for Reports) is upon the precise way in which the manures or fertilizers used are applied. There is very much to learn on this point and, if the six thousand dollars offered for large crops brings out new experience of value in this direction alone, we shall consider the money well invested. But it is evident that for the majority of farm crops the broadcast application of fertilizers, as well as other manures, is the best plan as a general rule. The aim should be to encourage a generous root growth, so that there will be a larger area of the plants' feeding surface at work upon the particles of soil to extract the plant food they contain. Where the manure or fertilizer is applied in the hill or drill only, the beneficial result of a wide-spreading root system in extracting plant food from the soil is partially lost.

It has been a pet argument with those who have made a practice of buying the ingredients and mixing their fertilizers themselves that they thereby secured a mixture of purer quality than they could buy in the form of a manufactured commercial fertilizer. This is not true, however, if standard brands of thoroughly inspected manufactured goods are considered. Agricultural chemicals vary in composition, and it is quite as easy to adulterate them as it is the mixed goods. It is hardly true that the mixture of agricultural chemicals will be purer, that is, more free from adulterants, than the brands put up by such manufacturers as Mapes, Bradley, Bowker, Quinnipiac, and houses of similar character. The real point in home-mixing is the financial one; that is, whether one can secure in this way a certain number of pounds of certain plant foods in specified forms at a less cost than the same ingredients in the same forms and quantities can be obtained in a manufactured fertilizer.

A Good Foundation.

Aside from one or two weak points, a solid foundation has been laid during the past year for the system of government experiment stations in the United States. The character of this first year's work is plainly shown by the proceedings of the Knoxville convention, so thoroughly presented in the last number of the AMERICAN AGRICULTURIST. A captious critic can find many points to complain of in this report, but while some mistakes have been made, and many details are yet to be worked out, it was apparent at Knoxville that there is a sincere desire to carry out the Hatch Act to the fullest extent.

A gratifying feature of the convention was the general recognition that the whole object of these institutions was to benefit the farmers of the country and that, therefore, without impairing their ultimate value and scientific usefulness, the chief aim of the stations should be to make them as directly useful as possible to the farmer. The main discussion was upon the best ways to do so.

Some jealousy was shown about the relations between the Stations and the Department of Agriculture, but with so able a man as our old contributor, Prof. W. O. Atwater, at the head of the station bureau of the Department, it is evident that these matters will gradually adjust themselves. Co-operation between the stations may also be left to the voluntary action of these institutions in groups of States, where work is being done on similar lines but under dissimilar conditions. The excellent start in co-operative horticultural experimenting is an instance of the several ways in which by mutual effort the stations can accomplish far more than by independent action.

PUBLISHERS DEPARTMENT.

The Superior Drill.

There is but little doubt that the successful farmer is the one who is sagacious and shrewd enough to utilize the different labor-saving devices that are presented from time to time. The illustration in this column is that of the improved Superior Grain and Fertilizer Drill, made by the Superior Drill Co., of Springfield, Ohio. With it the farmer can sow the various kinds of seeds through one range of distributers, and in a second can change the drill so as to sow oats, beans, corn, and the other coarse grains. The drill is supplied with the celebrated Mark's Feed Fertilizer Distributors, and with their own improved disk wheel for regulating quantity. It has no end gear wheels to be

changed, and the sowing of grain, grass seed, or fertilizer is commenced or stopped in an instant by raising or dropping a lever. In fields of varying fertility the quantity of fertilizer to be sown can be changed without stopping. The improved Double Force Feed Grain Distributor is constructed upon scientific principles and sows with perfect accuracy. It possesses none of the complications so prominent in other machines. It has two measuring channels, one for the sowing of wheat, rye, flax-seed and other small grains; the other for oats, beans, peas and coarser grains. The feed wheel delivers the grain in a uniform and steady stream through all the distributors alike. It sows out all the grain. The drill has also a force feed grass seed distributor, the same as the grain distributor but less in size, provided with flexible spouts for delivering the seed broadcast either in front or rear of the hoes.

Too much cannot be said of the excellence of this machine; it is certainly one of the most perfect of its kind. Every farmer should bear in mind that the makers of this drill do not pretend to compete in price with poorer machines. They give you the best that can be turned out. A neat little catalogue and illustrated paper are published by the Superior Drill Co., which should be interesting reading to every farmer and which will be sent to any one on application.

The Lagonda Manufacturing Company.

Here is a concern that bids fair to take a prominent part in the manufactures of the Buckeye State. One of its best known inventions is the Eclipse Post-Hole Digger. It has already achieved wonderful success, and its simplicity and efficacy in handling have won for it the enviable place it occupies in the agricultural world. Some of its features are that it will dig holes of any depth, shape or size. It can be worked easily and rapidly in ground either soft, gravelly, sandy, rooty, or sticky clay, and also where it is frozen to the depth of six inches. It is, in fact, a great labor-saver. To understand all its excellent qualities, you should put yourself in communication with the Lagonda Manufacturing Co., of Springfield, O., who are also makers of the celebrated Quaker City Grinding Mill, a machine that has long since established a reputation for its strength and durability, light-running, and simplicity.

The Kanneberg Roofing Co.

"How shall I cover my new house or barn?" is a natural question that arises about this season of the year with most farmers. There is more than mere words involved in the answer. Next to the foundation of any building, the roof should be considered most important. In that portion lies the protection of the entire building. One cannot be too careful in the selection of proper roofing materials. The Kanneberg Roofing Co. of 104-112 East Seventh St., Canton, O., have lately been demonstrating the value of their patent plain standing seam roofing, made of strictly genuine Bessemer, Siemens-Martin and Calamined steel. The results of their tests have been very gratifying and place them in the front rank of roofing manufacturers. Their experience covers many years, and the employment of only skilled labor enables them to produce materials of the highest order. A pamphlet issued by the Company shows the various styles and methods.

Cream-Making as a Science.

The Splendid Results Obtained from a Well-Known Creamery — Its Simplicity and Other Excellent Features.

The question of how to make the best cream is one of vital importance to every dairyman and farmer. In these days of healthy progression we

are always looking for labor-saving devices, for the products of inventive genius that will lessen daily toil and yet bring to highest perfection the artificial works of man. The illustration in this column of Carter's O. K. Creamery, made at Syracuse, N. Y., may justly lay claim to a place in the category of modern labor-saving inventions. It must surely make glad the heart of every maid whose dainty hands have ever drawn the sweetest of all liquid fluids, and comfortable the pockets of the farmer who has been sagacious and fortunate enough to secure one of them. The best features of this Creamery are its large cooling surface which, as a consequence, requires less ice, does more actual service than any other machine, and has cans that are furnished with plate glass fronts which always allow of the condition of the milk being seen without touching the Creamery. There are many of them in use in nearly every State and Territory. Mr. Carter publishes a neat little pamphlet illustrating and describing this O. K. Creamery and its adjuncts, which he will send to any reader of the AMERICAN AGRICULTURIST wishing one.

The Tornado Feed-Cutter.

Here is a machine that implies its name in every sense. To see it in operation, one would think, rather, that it was a young cyclone doing devastating work. For cutting ensilage, it stands alone, unrivaled, without an equal. Every intelligent farmer understands the value of properly prepared food for animals. The question is how to have the preparation of the food most perfect, accomplished in the shortest time, and cheapest manner. To meet these requirements, W. R. Harrison & Co., of Canton, O., have hit the nail exactly. For several

years they have been before the public with a machine that from its first introduction forced its way to the top of the line. The best features of the Tornado Feed Cutter are its strength, capacity and simplicity. It is, indeed, a beautiful specimen of perfect mechanism. It was only some half a dozen years ago when Harrison & Co. turned out during the first season not more than a score of machines. This year the capacity of their large establishment will be tested to its utmost for the construction of something like 1,500 machines is contemplated. This is good evidence in itself of the popularity of the "Tornado." The Feed Cutters are made in different sizes, for both hand and steam power, and at varying prices. An illustrated catalogue published by W. R. Harrison & Co., and which will be gladly mailed to any one, will perhaps tell the story better than any words we can write.

Irrigation is making great headway in portions of Australia. Just as the so-called great American desert in the United States has been largely reclaimed by irrigation, railroads and settlement, so vast tracts in Southern and Central Australia are being opened up. There is much discussion as to whether the government or private enterprise should control the irrigation works. Some very large private enterprises, notably that of Chaffey Brothers, have already been started, and now the Lake Bonney irrigation colony is trying to secure a grant of 160,000 acres of government land and equip it with ditches and other improvements at an expense of $1,000,000. It is then proposed to sell the land in plantations of 160 to 5,000 acres for the grape, olive, coffee, tobacco and other special crops.

In many of the largest dairies James Pyle's Pearline Washing Compound is now used for washing milk cans, bottles, utensils, etc., etc. Pearline is a perfect cleanser, most decidedly effective and rapid; it thus saves labor and guarantees good results. *Easy, safe, sure, quick.* Sold in bulk to dairies, by JAMES PYLE, New York.

The Best in the World.

Senator Henry C. Nelson, of New York, writes:

"SENATE CHAMBER, ALBANY, N. Y., April 4, 1885.

On the 27th of February, 1883, I was taken with a violent pain in the region of the kidneys. I suffered such agony that I could hardly stand up. As soon as possible I applied two ALLCOCK'S POROUS PLASTERS, one over each kidney, and laid down. In an hour, to my surprise and delight, the pain had vanished and I was well. I wore the plasters for a day or two as a precaution, and then removed them. I have been using ALLCOCK'S POROUS PLASTERS in my family for the last ten years, and have always found them the quickest and best external remedy for colds, strains and rheumatic affections. From my experience I believe they are the best plasters in the world."

Beware of imitations, and do not be deceived by misrepresentation. Ask for ALLCOCK'S, and let no explanation or solicitation induce you to accept a substitute.

We Sell DIRECT to FAMILIES
By avoiding Agents you save their enormous expenses and profits which double the costs on every first class Piano they sell.
PIANOS, $150 to $1500.
ORGANS, $35 to $500.

Sent for trial in your own home before you buy. GUARANTEED SIX YEARS. Catalogues Free.
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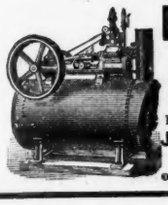
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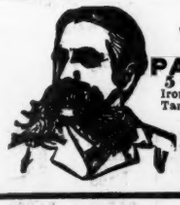
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State Aid to Agriculture.

What Our National and State Governments Are Doing for Its Promotion.

An extensive inquiry enables us to lay before the readers of the AMERICAN AGRICULTURIST quite a complete record of the efforts that Congress and the respective States have made of late to foster their agricultural interests. The facts are well grouped below in the reports by States. A State agricultural society, board, or commission, is the generally accepted form of administering State aid. Each State has an agricultural college endowed by the National government, but receiving more or less support from the State; also an agricultural experiment station which receives $15,000 annually from the National treasury, and in some cases further aid from the State.

THE NATIONAL GOVERNMENT.

The agricultural appropriations thus far made by Congress for the fiscal year ending June 30, 1889, are as follows:

THE UNITED STATES DEPARTMENT OF AGRICULTURE.

For Salaries.

	THIS YEAR'S APPRO'NS	LAST YEAR'S APPRO'NS
Commissioner's office, 24 clerks, stenographers, engineers, etc	$74,160	$71,280
Botanical division	5,440	4,040
Section of vegetable pathology	4,400	4,400
Pomological division	2,000	2,000
Microscopical division	3,200	3,000
Chemical division	11,900	11,500
Entomological division	7,300	7,300
Economic ornithology	8,060	8,060
Experimental gardens	2,500	2,250
Museum	3,120	3,120
Seed division	8,440	8,240
Statistical division	34,300	34,300
Forestry division	2,000	2,000
Total salaries	$166,820	$161,490

For the Work of the Various Divisions.

Botanical divison	$20,000	$4,500
Section of vegetable pathology	15,000	3,000
Pomological division	4,000	3,000
To investigate food adulterations	1,000	1,000
Laboratory and chemical work	20,807	6,000
Investigating insects	20,000	20,000
Silk culture	30,000	25,000
Economic ornithology	4,000	3,940
Experimental gardens	26,640	24,800
Museum	1,000	1,000
Seed distribution	100,000	103,000
Collecting statistics	70,000	65,000
Furniture and repairs	7.350	7,000
Library	2,000	2,000
Bureau of animal industry	500,000	500,000
Quarantine stations	15,000	20,000
Experiment stations, $15,000 to each State and Dakota	585,000	
Experiment station division	10,000	
Forestry	8,000	8,000
Postage	4,000	4,000
Contingent expenses	15,000	15,000
Total miscellaneous	1,458,797	816,240
Total Department of Agriculture	$1,625,617	$977,730

OTHER APPROPRIATIONS.

Sorghum sugar investigations	$100,000	$100,000
Survey for irrigation reservoirs	100,000	100,000
Printing, Cattle and Dairy Farming, $62,500; annual report Department of Agriculture, $200,000; miscellaneous, estimated, $37,500	300,000	200,000
Grand total	$2,121,617	$1,377,230

NEW ENGLAND.

Maine and New Hampshire support their State Boards of Agriculture with cramped appropriations, New Hampshire giving $3,000 annually. Maine has been fairly generous toward her agricultural college, but New Hampshire has done little in this way.

In Vermont the only appropriations for agricultural purposes made by the biennial Legislature of 1886 were $7,000 for establishing the State Experiment Station at Burlington, although the Governor was given power to appoint a cattle commission who should receive three dollars a day and their expenses, when actually at work. The State Board of Agriculture receives $2,500 annually, and the State Fish Commission per diem and expenses amounting to about $2,000 annually, making $12,000 at the outside, exclusive of publishing the annual report of the Board. In 1888, the Legislature gave $3,500 annually to the Station.

Rhode Island gets about $800 from fertilizer fees and taxes, out of which the Board of Agriculture pays the cost of fertilizer inspection. The Board receives $600 in addition from the State treasury, and the State Agricultural Society $1,200. The three county societies get $800 each provided they hold a fair, and about $1,500 are spent for the encouragement of the fisheries. The last Legislature also made a special appropriation of $5,000 for the establishment of a farm school at which the Hatch Experiment Station is to be located.

Massachusetts' efforts to promote agriculture are confined to her State board, county societies, cattle commission, agricultural college and experiment station, all of which are liberally supported. Witness the detailed statement of appropriations for the present fiscal year:

Bounties to 33 Agricultural societies	$19,200.00
Expenses Board of Agriculture	1,600.00
Expenses of the Secretary	350.00
Incidental expenses of the Board	500.00
Lectures at institutes	1,000.00
Lectures before the Board at the annual and other meetings	800.00
Salary of Secretary of Board	2,500.00
Salary of Clerk	1,200.00
Printing 15,000 copies of Report of Board	5,521.08
Agricultural college scholarships	10,000.00
Repairs and improvements at the agricultural college (special)	19,000.00
Printing 4,500 copies of college report	398.26
State Experiment Station	10,000.00
Printing 23,000 copies of station report	2,352.41
Cattle commissioners	7,000.00
Total	$81,421.75

In Connecticut for the year ended June 30, 1888, the total appropriations for promoting agriculture were $45,073.37, as follows: State Board of Agriculture, $3,500; State Agricultural Society, $2,500; the State Dairy Commissioner's salary, $1,625, and office expenses, $704.65; agricultural societies, $4,893; regular allowance for the support of the State Agricultural School, $7,000; special appropriation for laboratory and barn at the school, $10,000; State Agricultural Experiment Station, $8,000; Cattle Commission $800, all but $35 of this being for services in previous years; fish commission, $2,627, of which $1,000 was expended on trout, $975 on shad, and the balance on expenses. The printing of reports cost $3,423, including $2,156 for the annual report of the Board of Agriculture, $1,154 for the experiment station report, $62 for the agricultural school and $52 for the fish commission's report. The State Experiment Station received $3,759 for fertilizer license fees. Secretary Gold says, in reply to the inquiries of the AMERICAN AGRICULTURIST: "It is necessary that this check in the shape of an analysis fee be kept on each brand or the brands might be changed indefinitely, and it is in the interest of the honest dealer who sells honest goods, as well as to the advantage of the consumer. The former is encouraged, while the latter is protected." The appropriation to the State Agricultural Society is dependent upon its paying $3,500 in premiums. Each local incorporated society that pays $100 in premiums receives $100 from the State, and the remainder of the appropriation is divided among them in proportion to the premiums they pay above $100.

NEW YORK, NEW JERSEY AND PENNSYLVANIA.

New York has of late been very liberal toward its vast agricultural industries. The institute work has proven very successful and the last Legislature increased the appropriation for farmers' institutes from $6,000 to $10,000. The large appropriations for fisheries and museums go far to swell the apparently liberal total of the following so-called agricultural appropriations for the fiscal year begun October 1st, 1888:

For farmers' institutes	$10,000.00
Building and apparatus for State Experiment Station at Geneva (special)	8,000.00
Agricultural museum and Fitch collection of insects	3,000.00
Printing extra reports (special)	3,175.25
Commissioners of fisheries, for expenses of mapping and surveying	5,000.00
Ditto, for printing, etc	2,000.00
State museum of natural history (including lapses from May, 1885, to May, 1887)	17,448,86
Expenses of establishing and holding examinations for applicants for State scholarships at Cornell University	300.00
State entomologist (salary)	2,000.00
Official expenses of same	300.00
Arranging herbarium in natural history museum	1,500.00
Expenses of collecting specimens	200.00
State cabinet of natural history, for salaries of director and three assistants, increase and preservation of collection	15.000.00
State agricultural society premiums	10,000.00
Premiums for other societies	20,000.00
Regular expenses of State Experiment Station	20,000.00
Forest commission	18,500.00
Ditto, necessary expenses	11,500.00
State dairy commission	85,000.00
Replenishing lakes, etc., with fish	30,000.00
Compensation of game and fish protectors	18,000.00
State dairymen's association	2,500.00
Total for agriculture	$283,424.11

New Jersey gives $3,700 annually to its State Board of Agriculture, $12,000 to the State Experiment Station, and prints the agricultural and horticultural reports. Last year $30,000 was voted for a chemical laboratory at Rutgers College.

Pennsylvania imposes taxes of $10 to $30 on each brand of fertilizer, and receives $7,250 annually from this source, which creates a special fund from which the Board of Agriculture pays the expense of fertilizer analyses, and any balance goes into the general fund of the State treasury. An average of $3,250 is paid annually for suppressing contagious pleuro-pneumonia, of which work the Secretary of the Board has charge. The Board is a State Department of Agriculture, removed so far as possible from political influence, and receives $7,250 from the State, the statutes providing that of this sum the actual and necessary expenses of members shall not exceed $1,500; office expenses, $750; preventing the spread of diseases among live stock, $500; for institutes, $3,000; secretary's salary, $1,500. The State Agricultural Society receives $2,250; the Horticultural Society, $300, and the State Dairymen's Association, $300 annually. The State agricultural reports include the proceedings of the Board and State Society, of which 31,500 copies are printed annually, at an expense of $25,000, and 6,000 quarterly reports at an expense of $750. The State increased the Agricultural College fund to $500,000, and its interest payment on this account amounts to $3,000 annually. By special act the Legislature of 1887 appropriated $100,000 for additional buildings at the Agricultural College, and $3,000 annually for four years for the Experiment Station in connection therewith. In 1883, the fish commissions were given $25,000, and in 1887 $15,000 for the propagation and protection of fish. The total annual expenditures for the promotion of agriculture are about $50,000

CENTRAL STATES.

Ohio, for the fiscal year ended Nov. 15, 1887, paid $32,390 for the ordinary expenses of its Board of Agriculture and improvements on the State Fair grounds; Experiment Station, $3,436; fish and game commission, $7,446; live stock commission, $2,227; State Horticultural Society, $1,000; State forestry bureau, $755. It also paid $23,306 to the State University, which has a department of agriculture. On condition of raising an equal sum, county agricultural societies may draw $200 from each county treasury, amounting in eighty-eight counties to $17,600, making the total appropriations for agriculture $87,960, or about 1 1-3 per cent of the total State expenditures. A State dairy commission is also supported.

In Illinois, the Legislature of 1885 appropriated annually for agricultural purposes for the years 1886 and 1887 as follows: State Board of Agriculture, $13,200; State Horticultural Society, $2,000; local agricultural societies, $8,500 annually; State cattle commission, $10,000; fish commission, $6,000; Agricultural College, $29,000; dairy association, $500; total for promoting agriculture, $69,200.

The last Legislature in Indiana ended in a deadlock, and made no special appropriations. The Board of Agriculture gets $1,500 annually regularly, and the State Horticultural Society $500 a year, and the fish commission $2,000, while the local societies get the benefit of the license fees.

The agricultural appropriations in Wisconsin for 1887 were: Farmers' institutes, $12,000; State Agricultural Society, $4,000; fifty-two country agricultural societies, $10,400; North Wisconsin Agricultural Association, $2,100; State Horticultural Society, $1,000; Wisconsin Industrial Association, $1,000; Central and Southwestern Industrial Associations, $900 each, or $1,800; State Dairymen's Association, $1,000; Wool Growers' Association, $100; paper for and printing of reports of the State Agricultural, Horticultural and Dairymen's Associations, Experiment Station and North Wisconsin Association, $17,647; postage on reports, $770; janitor for agricultural rooms, $660; fish commission, $11,000; State and county veterinary service, $5,017; total, $68,631.70. The State is usually very liberal toward its vast agricultural interests, although a bill to divorce the Agricultural College from the University, and giving the independent college $150,000, failed in 1886.

The Michigan Legislature, at its last session, for the maintenance of the Agricultural College, including minor additions to the buildings, appropriated $36,505; for new buildings and important additions to existing ones, $28,700; equipments for the weather service, $2,287.50; maintenance of the weather service, $6,300, expenses of the forestry commission, $1,000. The Michigan Horticultural Society also has a small appropriation, and the reports of both it and the State Board of Agriculture are printed by the State.

WESTERN STATES.

In Iowa, for the biennial period ending in June, 1889, the total appropriations for promoting agriculture are $16,500, of which the Agricultural College receives $7,000, fish commission $3,000, forty local counties' societies about $150 each, or $6,000.

(*Continued on Page* 156.)

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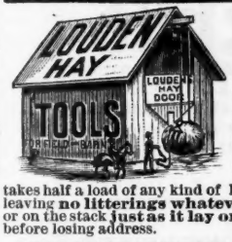

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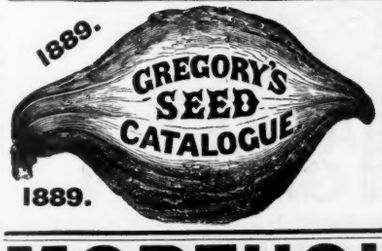

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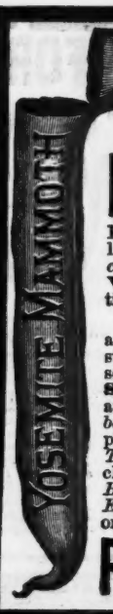

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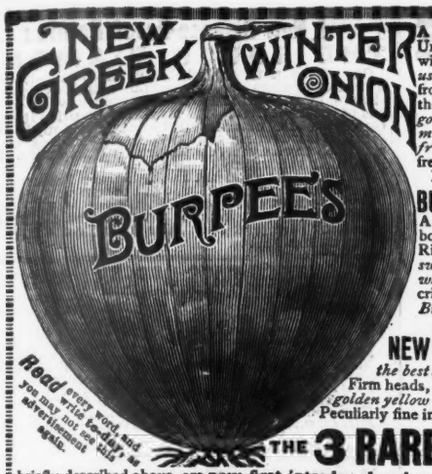

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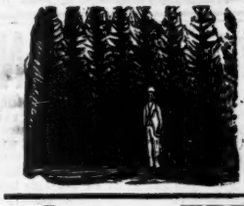

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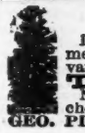

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The very **BEST Machine** ever made to sow **Clover** and **Timothy. All iron wheel,** 40 in. diam.; like a Bicycle wheel. Hoppers 14 ft. long. No Gearing. No friction. Send for circulars of this Seeder, and the "Crown Grain and Fertilizer Drill," the best on the market.

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Sows all kinds of grain and cleaned grass seed; does better work than can be done by any other means whatever. Ten acres of wheat have been sown in one hour with it. Saves its cost with less than one day's use. Saves seed. Any one can operate it. Price only **$5.** Send for descriptive circular. **GOODELL CO.,** Antrim, N. H., Sole Mnfrs.

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Indispensable for sowing in windy weather. *Send for circular*

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THE NEW MODEL —OUR LATEST AND BEST MOWER.

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For 1889 offers the most complete list of **GRASSES** and **FODDER PLANTS, CEREALS** and **ROOT CROPS** ever catalogued. It contains, besides, Practical Essays on above topics written especially for this edition by

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Farmers' Manual Mailed Free on Application.

We offer in this Manual many new, scarce and valuable **Grasses** and **Cereals** not in general cultivation, among them **Bermuda Grass** (seed), **Louisiana Grass, Esparsette** or **Sainfoin, Japanese Buckwheat, Texas Blue Grass, Japan Clover** and **New Early Red Clawson Winter Wheat** (the latter in the fall).

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INSECTS on FRUIT TREES

Can be destroyed by spraying the trees with Loeden purple dissolved in water. For full directions and improved outfits for **Hand** or **Horse Power** at **BOTTOM CASH PRICES,** address **FIELD FORCE PUMP CO. Lockport, N.Y.**

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THE VILLAGE NURSERIES

is an old establishment which is known throughout the country as fully reliable and trustworthy. Our stock consists of **Peach Trees,** (embracing 75 varieties, graded into the following sizes, 5-6 ft., 4-5 ft., 3-4 ft., and 2-3 ft. Small Fruits, Ornamental Stock, **Pear, Quince and Apple Trees.** This stock is surpassed by none in the country. We also have a fine stock of

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JOS. H. BLACK & SON, (Successors to C. Black & Bro.,)
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GRAPES

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WILD FLOWERS, SHRUBS, Vines, Ferns, Orchids, Bulbs, for pleasure grounds, rockeries, &c., choice Garden & Field Seeds that will grow. Send for Catalogue. F. H. Horsford & Co., Charlotte, Vermont.

Peach Trees, **APPLE TREES, &c., at very low Prices.** Send for price list. **R. S. JOHNSTON,** Stockley, Del.

Farming in Foreign Lands.

The great need in Chilian agriculture is improved Yankee machinery for harvesting the wheat crop before the rainy season; but the natives are slow to appreciate the value of such improvements and the opening for American manufacturers is not as inviting as might be expected.

A co-operative creamery in the United States is doing a big business if it utilizes the milk or cream of 2,000 cows. Little Denmark has over 200 such factories that each work up the milk of 5,000 to 6,000 cows. The whole-milk system, with separation of the cream by the centrifuge, is universally adopted. The cost of producing milk varies from 75 cents to $1 per 100 pounds; 5,000 pounds of milk in one year is much above the average yield per cow; from 25 to 30 pounds of milk are required for a pound of butter and about 13 pounds for one of cheese.

Prizes for horse shoeing were offered last year for the first time by the Royal Agricultural Society of England, and the two men who came out first among 43 and 46 competitors, respectively, were made members of the Farriers' Company, which is considered a great honor. This Company was established in 1356—upwards of five centuries ago—and the farriers' craft is of still more ancient date. Mention is made of them in the camp of one of the Roman Cæsars, and there is a beautiful coin of Tarentum extant, struck 300 years before Christ, which represents a horse being shod.

The Italian government supports nineteen practical schools of agriculture and six special schools. It pays about three-fifths of their running expenses, the remainder being provided by the provinces in which they are located, which also furnish the farm buildings and repairs, much after the plan of the American agricultural college grant. All but two provinces have one of these institutions. About eight hundred students attend annually, most of the graduates going into agricultural pursuits. Experimenting with different breeds, implements, etc., is a feature of these schools.

The advanced examination in practical agriculture and allied subjects held by the Royal Agricultural Society each May, is a plan worthy of imitation. The regulations for the next examination, just issued, show that agriculture, book-keeping, chemistry, land surveying, agricultural engineering, botany, geology and anatomy, are the principal subjects of examination. In addition to a certificate, prizes are offered to those who acquit themselves most creditably. The certificates are much sought after by agricultural college graduates and others in training for positions as farm managers or workers in agricultural science. Possibly something of this kind might be conducted by the United States Department of Agriculture.

Tasmanian wool now commands the highest prices in the Australasian markets. The original Merino stock of Tasmania came from New South Wales, but the improvement of the breed has been much less in the latter country than in the former, so that to-day there is an active demand in New South Wales for thoroughbred Merino rams bred in Tasmania. We believe the late embargo against the importation of sheep from other countries has recently been raised, so that American breeders can now have an opportunity to cultivate this extensive market. Breeders of beef and dairy stock in Australasia are also waking up to the value of using thoroughbred males, and that section of the world will probably be a lucrative market for thoroughbred stock in the future.

England is one of the last of the great nations to establish a department or government board of agriculture. A bill for the purpose was read the first time just before Parliament adjourned, and will come up at the next session. It transfers to the proposed department about all the powers and duties relative to agricultural matters now given to the privy council, the land commissioners and others. Hitherto all that has been done by the government has been through various channels and upon no organized system, but the proposed bill groups all these duties under the one head. The board is to be composed of the president of the council, the principal secretaries of state, the first commissioner of the treasury, the chancellor of the exchequer and of the duchy of Lancaster, and the secretary for Scotland, one of whom, or a member of the privy council, shall be appointed president by the Queen.

March, April and May are the best months in which to purify your blood, for at no other season does the season so much need the aid of a reliable medicine like Hood's Sarsaparilla, as now. During the long, cold winter, the blood become thin and impure, the body becomes weak and tired, the appetite may be lost. Hood's Sarsaparilla is peculiarly adapted to purify and enrich the blood, to create a good appetite and to overcome that tired feeling. It increases in popularity every year, for it is the ideal spring medicine.

N. B. Be sure to get Hood's Sarsaparilla.

"Every spring for years I have made it a practice to take from three to five bottles of Hood's Sarsaparilla, because I know it purifies the blood and thoroughly cleanses the system of all impurities. That languid feeling, sometimes called 'spring fever,' will never visit the system that has been properly cared for by this never-failing remedy." W. H. LAWRENCE, Editor Agricultural Epitomist, Indianapolis, Ind.

"I take Hood's Sarsaparilla every year as a spring tonic, with most satisfactory results." C. PARMELEE, 349 Bridge street, Brooklyn, N. Y.

Hood's Sarsaparilla

Sold by all druggists, $1; six for $5; Prepared only by C. I. HOOD & CO., Apothecaries, Lowell, Mass.

100 Doses One Dollar

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by return mail, full descriptive circulars of MOODY'S NEW TAILOR SYSTEM OF DRESS CUTTING. Any lady of ordinary intelligence can easily and quickly learn to cut and make any garment, in any style to any measure for lady or child. Address

MOODY & CO.,
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SCRIBNER'S LUMBER AND LOG BOOK.

Over One Million sold. Most complete book of its kind ever published. Gives measurement of all kinds of Lumber, Logs, Planks, Timber; hints to lumber dealers; Wood Measure; Speed of Circular Saws; Care of Saws; Cord-wood Tables; Felling Trees; Growth of Trees; Land Measure; Wages, Rent, Board, Interest, Stave and Heading Bolts, etc.

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A BRACKET SAW OUTFIT FOR 30 CENTS.

With this outfit any boy or girl can **make money.** With 10 cents worth of wood you can make articles that will sell easily for 75 cents or more. You get your money back on the first article you sell. You can make articles to beautify your home and presents to your friends. Persons who work during the day can make extra money by sawing a few minutes evenings. Send for an **outfit** and try it; you will never regret it. The outfit consists of one **Steel Bracket Saw Frame, Extra Saw Blades, Brad Awl, Copying Paper, Sand Paper, one dozen Patterns** for making **Easels,** Match Safes, **Wall Brackets,** Card Baskets, &c., one pack **Business** Cards to give to your friends, and full directions for using, packed in a neat box and sent by mail, postpaid, for 30 cents; 4 for one dollar.

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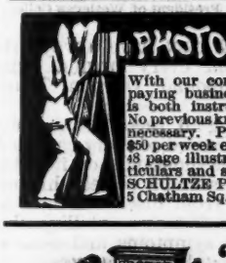

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Sent on trial. Freight paid. Fully Warranted.
3 TON $35.
Other sizes proportionately low. Agents well paid. Illustrated Catalogue free. Mention this Paper.

OSGOOD & THOMPSON, Binghamton, N. Y.

New Book! LEARN TO **DANCE** Without a teacher. Latest dances, full instructions and our elegant 8 page illustrated story paper 3 months only 10 cents. Address THE HOME CIRCLE, St. Louis, Mo.

I.

WHEN TO SING.

Enthusiasm for a song
A not—in frequent case is,
When old conviction jogs along
With instance as a basis.

Twenty years; a long time.

Enterprise may nap like Rip Van Winkle or develop like the Compound Oxygen Treatment.

Twenty years of constant development work reciprocally; that is to say; DRS. STARKEY & PALEN had reason to believe that their Compound Oxygen Treatment would revitalize invalids; and invalids in being revitalized had reason to believe in DRS. STARKEY & PALEN.

It is from this basis they present the following facts concerning their Compound Oxygen Treatment.

Their office records, which are always open for inspection, show over 45,000 different cases in which their Compound Oxygen Treatment has been used by physicians in their practice and by invalids independently.

The remedial results of the Compound Oxygen Treatment are salutary, because it is a vital adjustment of nature's most essential blood making elements.

It is blood food pure and simple, instantly and easily available.

It is inhaled to the breathing surfaces; at once it is appropriated, it gets into the circulation; in fact, it becomes the circulation; vitality is aroused and then,

Since the sound parts of your system do not want it, it surges with healing concentration upon the weak parts and, you get well.

It is very simple but very real; in 1884 Mrs. Mary A. Livermore the celebrated advocate of the temperance cause, said

DRS. STARKEY & PALEN:
"Four years ago I found myself utterly broken down in health. I used your Compound Oxygen Treatment, then my return to health was rapid and since then I have enjoyed almost uninterrupted good health and almost youthful vigor. MARY A. LIVERMORE,
Melrose, Mass., Feb. 1, 1884."

The Hon. Wm. D. Kelley, recently re-elected for the 15th time to Congress says:
DRS. STARKEY & PALEN:
"I am now more than two years older than I was when I first tested your Compound Oxygen Treatment for a very bad case of hereditary catarrh. Since then I have had no perceptible effusion of blood and breathe as deeply as I did at any period of my young manhood.
WM. D. KELLEY,
Philadelphia, 1883."

The Hon. Wm. Penn Nixon, Editor of the Chicago Inter-Ocean, also says:
DRS. STARKEY & PALEN:
"I used your Compound Oxygen for very serious trouble with my throat and lungs, at the end of five months I found myself a well man. WM. PENN NIXON,
Chicago, April 4, 1883."

We have only space to add the following.

DRS. STARKEY & PALEN:
"I am satisfied that the Compound Oxygen is an excellent remedy. DR. O. A. DARBY,
President of Columbia Female College,
Columbia, S. C., March 13, 1888."

DRS. STARKEY & PALEN:
"I have used the Compound Oxygen with much satisfaction. R. I. WARNER,
Professor of Alma College,
St. Thomas, Ont., Sept. 22, 1888."

DRS. STARKEY & PALEN:
"I fully indorse the Compound Oxygen Treatment. J. F. SPENCE,
President of Grant Memorial University,
Athens, Tenn."

DRS. STARKEY & PALEN:
"I regard your Treatment by Inhalation as a wonderful discovery of science and a blessing to suffering humanity. REV. A. A. JOHNSON,
President of Wesleyan College,
"Fort Worth, Texas, November 2, 1888."

DRS. STARKEY & PALEN have always received reports from every invalid who undertook the Compound Oxygen Treatment.

In this way, during all these years, they have kept an exact record of every case and to-day any one of the thousands of invalids they have treated can find a perfect history of his development from disease to health. Any one is able to state a case intelligently, that is, describe the symptoms and general condition, and this is all that is necessary, for DRS. STARKEY & PALEN then have something tangible to take hold of and can tell you exactly if their Compound Oxygen Treatment will do you good or not. Either way they will be candid.

Their reputation depends upon the opinions they give and the cures they undertake, so they make sure of their work by knowing what they have to overcome at the outset.

If you want to know more about the Compound Oxygen Treatment send for the brochure of 200 pages. It will be forwarded free of charge to any address.

It contains a record of result in the Compound Oxygen Treatment in cases of consumption asthma, bronchitis, dyspepsia, catarrh, hay fever, headache, debility, nervous prostration, neuralgia, rheumatism and all chronic and nervous disorders. Address DRS. STARKEY & PALEN, No. 1529 Arch St., Philadelphia, Pa.

II

UP HILL OR DOWN HILL?

The man, no matter what the odds
Who sturdily advances,
Proves, we are not so many clods
Plowed up by circumstances.

A sentiment, you say, that answers very well in ordinary matters, but which will not cover the case in disease.

Why not?

Does the fact that you are now ill prove that you must continue ill?

Invalids could be delightfully astonished at the result in the majority of cases if they were as terribly in earnest about curing their maladies as they were in becoming subject to them.

Here's the way some of your contemporaries have taken to get out of difficulties.

It is still open.

DRS. STARKEY & PALEN:
"I have thought several times I would write and tell you how well I am. I have not used any Compound Oxygen in a year now. I am never troubled with my throat or lungs and feel well. MRS. J. ALLEN PARKS.
Woodruff, S. C., July 30, 1888."

DRS. STARKEY & PALEN:
"I was induced by a friend to try your Compound Oxygen Treatment. The result was marvelous. I will always recommend Compound Oxygen as the greatest vitalizing agent known for I certainly feel that it has prolonged my life. MRS. E. H. HENDERSON,
No. 331 Decatur St., Brooklyn, N. Y., June 4, 1888."

DRS. STARKEY & PALEN:
"I think your Compound Oxygen is a wonderful remedy for the afflicted, especially in nervous diseases. I have been entirely relieved of dyspepsia by its use. One thing certain, it imparts vigor and energy, and gives me sound sleep at night. MRS. LOUISE BUNKER.
No. 125 W. 34th, St., New York City, N. Y."

DRS. STARKEY & PALEN:
"Your Compound Oxygen has greatly benefited me. I have been suffering with throat trouble for more than a year and am now clear of it. ELLEN ROGERS.
212 Monument St., Baltimore, MD., Oct., 3, 1888."

DRS. STARKEY & PALEN:
"About five years ago I used Compound Oxygen for catarrh. I derived great benefit from it. In fact I have not been troubled any since. HATTIE E. KREPS.
Goshen, Elkhart, Co., Ind., August 25, 1888."

DRS. STARKEY & PALEN:
"I took one Treatment of Compound Oxygen last year, and it cured me of catarrh. W. W. DOWLING.
Toleston, Lake Co., Ind.,"

DRS. STARKEY & PALEN:
"I believe your Compound Oxygen Treatment is an excellent one for indigestion, nervousness, and debility. I have great faith in it, inasmuch as I have been relieved of these by the use of it. MRS. J. G. CLINKSCALES.
Anderson, S. C., September 10, 1888."

DRS. STARKEY & PALEN'S office records, which are always open for inspection, show over 45,000 different cases during the past 20 years, in which their Compound Oxygen Treatment has been used by physicians in their practice and by invalids independently.

Every patient of DRS. STARKEY & PALEN reports from time to time and in this way they are enabled not only to keep an accurate record of each case, but to provide, free of charge, supplementary aid to accelerate the action of their Compound Oxyen Treatment whenever it is needed.

The fact of your becoming a patient of DRS. STARKEY & PALEN means that they believe they can cure you, for they vastly prefer to tell you beforehand that their Compound Oxygen Treatment will do you no good than to have you discover this afterwards.

Sometimes, in the face of disease that has been neglected until nothing short of a miracle will avail, DRS. STARKEY & PALEN are obliged to admit that Compound Oxygen Treatment is powerless, but, fortunately, this is not often the case or else they would have stepped down and out, long since.

If you have the ghost of a chance the Compound Oxygen Treatment will put body to it and-briefly you get well.

If you want to know more about the Compound Oxygen Treatment send to DRS. STARKEY & PALEN for their free brochure of 200 pages.

This publication contains a record of result in the Compound Oxygen Treatment in cases of consumption, asthma, Bronchitis, dyspepsia, catarrh, hay fever, headache, debility, nervous prostration, neuralgia, rheumatism, and all chronic and nervous disorders. Address DRS. STARKEY & PALEN, No. 1529 Arch Street, Philadelphia, Pa.

III.

WITH THIS ONE EXCEPTION

Our present good is modified
From cruder good of yore;
An adage which is not applied
To th' trowsers father wore.

Sometimes, DRS. STARKEY & PALEN hear: "you have an invariable quantity to apply to variable purposes," in other words the Compound Oxygen Treatment must of necessity manifest certain degrees of remedial efficiency in the relief of uncertain and capricious diseases.

It would be unfair to say to nature, who is also in the healing line when she can have her own way, "your Oxygen is unfitted for emergencies because it is a stock quantity with you; for civilization multiplies and complicates diseases.

True; but at bottom the fact remains that disease in any of its manifestations is the result of organism going wrong, of perverted vitality, and that the revitalization of the system means the restoration of health.

DRS. STARKEY & PALEN'S Compound Oxygen Treatment is essentially this good old stock quantity of nature vitalized by positive magnetization until it becomes effectively ozonized.

That this is true may be seen from the following testimony to its healing powers which answers the objection at the head of this brief note, effectually:

DRS. STARKEY & PALEN:
"I have used about twenty of your Compound Oxygen Treatments for my patients (all of whom I regarded as incurable by any means at my command) within the last six years and in all cases it has given good satisfaction. I have used it in the following diseases: paralysis, catarrh, nervous prostration, spermatorrhea and general debility. All who have used it have been greatly benefited and some were permanently cured. I regard your Compound Oxygen Treatment as the best remedy within my knowledge. Truly yours, R. L. GREEN, M. D.
Bancroft, Mo., Jan. 13, 1889."

DRS. STARKEY & PALEN:
"I have observed the effect of Compound Oxygen in the case of my brother-in-law, who has been wonderfully restored by it.
Beyond his case my observation does not go, but it strikes me as the remedy for certain classes of diseases.
WARREN A. CANDLER, D. D.,
President Emory College.
Oxford, Ga., Nov. 1, 1888."

DRS. STARKEY & PALEN:
"My son has used Compound Oxygen with good effect. It seems to be the strengthening agent he needs in his growing days. REV. THOS. CAMPBELL,
Le Sueur, Min., Oct. 16, 1888."

DRS. STARKEY & PALEN:
"We feel well pleased with the Compound Oxygen Treatment, and the benefit received from it. MRS. A. C. COLE,
Hammond, Pa., Nov. 18, 1888."

DRS. STARKEY & PALEN:
"I have been using your Compound Oxygen Treatment, not with the regularity I ought, perhaps, but as best my business habits would permit. I am free to say that I feel much improved, and, for the first time in many years, face approaching winter without dread.
THOS. W. COCHRAN,
Omaha, Neb., Nov. 19, 1888."

DRS. STARKEY & PALEN:
"I am confident that your Compound Oxygen Treatment has been a great boon to us. REV. E. D. BEWICK,
Palmyra, Neb., Dec. 18, 1888."

DRS. STARKEY & PALEN:
"I am greatly benefited by the use of your Compound Oxygen Treatment, MRS. S. R. JOHNSON,
251 E. Gregory St., Pensacola, Fla., Dec. 22, 1888."

If you want to learn more about DRS. STARKEY & PALEN'S Compound Oxygen Treatment send for their brochure of 200 pages, it will be forwarded to any address free of charge. It contains a record of result in the Compound Oxygen Treatment in cases of Consumption, Asthma, Bronchitis, Dyspepsia, Catarrh, Hay Fever, Headache, Debility, Nervous Prostration, Neuralgia, Rheumatism, and all Chronic and Nervous Disorders. Address DRS. STARKEY & PALEN, 1529 Arch St., Philadelphia, Pa.

Newspaper Frauds.

The ice crop may fail and hopes of ice carnivals prove illusive, but every winter brings forth, without regard to weather, its quota of fraudulent so-called "family papers." The recent winter was unusually prolific in this sort of thing, and the offers of "stem-winders" and other "premiums" was peculiarly attractive to that class of people who are always on the lookout for an opportunity to get something for nothing. We have shown up several of these enterprises, but still another is brought to our notice by I. W. Fetter, Lancaster Co., Pa. This enterprise, hailing from Memphis, Tenn., presented a scheme for roping-in the unwary which savors of lottery. Instead of offering bogus "stem-winders" or other illusive trash, it promised a "grand prize distribution" by lot, in which every subscriber was to get something. There was also to be a "special grand cash award" to agents. Our correspondent writes us that the dupes of this scheme received a few copies of a paper which suddenly stopped coming, and neither they nor the agents have ever received any notice of having drawn anything in the "grand distribution." These fellows start their schemes without the slightest idea of ever publishing anything worth reading. They do not even use scissors to prepare the matter for their "journals," but hire a few copies printed from old stereotype plates, just to make a show, and keep within the law. After a brief harvest of subscriptions the thing stops, leaving their subscribers to reflect on the vanity of chasing rainbows.

A Fortune in Gold Watches.

We have received from subscribers a flood of circulars and advertisements offering solid gold watches free as a premium for a so-called "family publication." We hope there is no reader of the AMERICAN AGRICULTURIST so foolish as to send one dollar to a stranger in the expectation of getting for it a solid gold watch and a paper one year, even when the advertisers express their willingness to spend two million dollars in such transactions. New York sharps don't spend money in that way. We scarcely need add that the "family publication" has been refused entry at the post-office at second-class rates, which virtually kills it; and that the "stem-winder" is a brass toy with a paper dial, upon which the hands move only as they are moved when the stem is turned by hand. A post-office inspector is after the fellows, and their career will be a short one.

Scattering the Sawdust Swindlers.

The vigilance of the legal authorities and the exposures of the AMERICAN AGRICULTURIST seem to have made New York an unhappy place for the fellows who advertise "green goods." They retired to the west shore of the North River, but that proved too near New York for them, and they are seeking fresh fields and pastures new, even on the borders of the great Northern wilderness. Roberts Lyme, of Tangipahoa parish, La., forwards us one of the circulars, mailed in New York which calls for an answer to be sent to a small place in Fulton Co., N. Y. Another one of the circulars, forwarded by our esteemed friends of the Earcoxie nurseries, Mo., was issued from Toledo, O. The fact that the sawdust swindlers still keep the field affords sad proof that they continue to find dupes so foolish as to take their bait in the criminal hope of obtaining counterfeit money so well done as to pass for genuine.

A Chance for Employment.

Daniel B. Patterson, Union Co., Ohio, and others forward us circulars from a concern which advertises "electric goods" and offers "steady employment, wages $2.50 per day, expenses advanced." The "goods" consist of "electro-galvanic belts," and it is required as an essential preliminary for obtaining employment that every applicant shall first sell two of the belts and obtain written testimonials from at least two persons in his own immediate vicinity who have been cured or benefited by them. The inducements to furnish the all-important testimonials are very alluring—so much so that they offer great temptations for unscrupulous persons to make them to order. But in all the letters sent us on this subject we do not learn of one person who has found employment at the proposed salary or any other. We have shown repeatedly in these columns that there is no healing power in the so-called electric belts. To look for profitable employment based upon bona-fide cures effected by them is like hunting for a pot of gold under the end of a rainbow.

Agricultural Patents Expiring This Month.

Compound for Fruit Trees	J. R. Westover.
Apple Cutter and Corer	S. Mead.
Cultivator	J. H. Pattie.
Rotary Cultivator	G. Collins.
Fruit Gatherer	P. Comver.
Milk Cooler	H. Messenger.
Potato Planter	H. J. Kent.
Horse Hay Rake	D. P. Sharp.
Corn Stalk Cutter	S. Walters.
Wind Mill	W. D. Nichols.
Fertilizer	J. and A. Fox.
Harrow	A. Jones.
Harvester	J. H. Jones.
Corn Husker	J. M. Evarts.
Corn Planter	J. M. E. Valk.
Gang Plow	G. W. Haines.
Animal Poke	B. E. Blakslee.
Pruning Shears	O. Snell.
Cultivator	S. Crossley.
Hand Hoe Cultivator	W. Goodwin.
Fence Post	J. F. Keeler.
Harrow	O. J. Leabo.
Harvester	J. Beach.
Harvester, corn	T. Merrell.
Gang Plow	D. M. Fay.
Horse Hay Rake	S. Rockafellow.
Churn	A. J. Cox.
Cultivator and Potato Digger	J. G. Lacy.
Fence	L. Moore.
Preparing Fertilizers from Earth	S. Brown.
Fruit and Vegetable Parer	A. G. Batchelder.
Corn Planter	A. Windeck.
Combined Planter and Cultivator	J. N. Burton.

All the devices embodied in the above patents are about to become public property, and may be freely appropriated and made after the date of their expiration by any one so disposed.

A Grand Enterprise for South Carolina.

If the prize of $500 for the best acre of Corn offered by the AMERICAN AGRICULTURIST is taken by a South Carolina farmer, the South Carolina Department of Agriculture will duplicate this amount, giving an equal sum in addition to it, making the *total cash obtainable for the best acre of Corn, if grown in South Carolina, $1,000 in gold coin.* If this premium is not taken, the South Carolina Department of Agriculture will give for the largest yield of Corn obtained in this competition by a South Carolina farmer, $100. While this will be a grand thing for the farmers, it is a splendid enterprise for South Carolina, and is already attracting much attention among the very best farmers throughout the North and West. If South Carolina captures the Corn Prize it will do more to advertise her agricultural resources to these farmers and stimulate the very best class of immigration than any measure the State could engage in. The reports of these prize crops as published in the AMERICAN AGRICULTURIST will of themselves constitute a grand advertisement for the State. We heartily indorse the idea that if South Carolina captures the AMERICAN AGRICULTURIST'S first prize for corn it will be a greater advertisement of our resources than many times $500 expended in ordinary advertising. It will convince the progressive farmers of other sections that South Carolina is a far better agricultural State than many of them think. It is the duty of every progressive farmer in the State to put forth his best efforts to secure this grand prize of $1,000 for the best acre of corn, not only for his own sake, but for the sake of the State. Even if he doesn't get the first prize he may secure the secondary prize of $100 offered by the State Department, or some of the many and very liberal special prizes offered by the AMERICAN AGRICULTURIST, while the extra crop he receives will, in every case, more than repay him for the extra efforts he has made to secure the prizes. The full particulars of this remarkable enterprise will be furnished free by Col. A. P. Butler, of Columbia, the Commissioner of Agriculture, or by the AMERICAN AGRICULTURIST, 751 Broadway, New York.

Painting Farm-Houses.

One of our subscribers writes us that he recently made a trip through eight States, and was impressed that the farm-houses might be made much more attractive and homelike by a more tasteful use of paint. Some farm-houses were not painted at all; of those painted, nearly all were white, with green or drab blinds; and usually the exceptions were rendered positively ugly by the paints used. Our correspondent thinks that white with green blinds can be improved upon, and doubtless he is correct; yet he confesses that he has a liking for a white cottage almost hid among the trees. The poets have had the same liking, and perhaps the artistic eye is displeased by the white farm-house because there is no green to relieve it. The subject of house painting is penetrating into popular concern and a number of readers have complained to us that they could not obtain paints for outside work that would "hold their color;" that the house of the desired tint when new soon faded. The light green, now quite popular, seemed most disposed to fade. This was the result of some fault in the material or in its application; for there are houses painted these tints that retain them. The cost of painting a house nicely is little, if any, more than that of painting it in the conventional colors of farm-houses. Its tint must be suited to the size and situation of the house, and to its surroundings; and such adaptation may well receive the study of home-loving people.

The New Appropriations for the United States Department of Agriculture for the fiscal year ending June 30, 1890, are precisely the same (as passed by the House) as those for the current year detailed on Page 144, with the following exceptions: $1,000 more is given for a clerk in the Division of Pomology; $5,000 specially to the Chemical Division for analyzing adulterated foods, in addition to the regular $1,000, but otherwise the Chemical Division has only $5,000 against $20,807 last year; extra for collecting statistics, $5,000; extra for Experiment Station Division, $5,000. As yet, no money for continuing the sorghum sugar experiments has been provided, but an item of $250,000 was inserted in one of the appropriation bills for the survey of irrigation reservoirs, preliminary to the proposed great irrigation scheme outlined in the AMERICAN AGRICULTURIST for November, 1888. The total of the Agricultural Department appropriation for 1890 is $1,463,190. An effort was made to have the $100,000 worth of seeds distributed by the respective State Experiment Stations, but it failed. The reason given by Hon. W. H. Hatch for opposing this change was that at this time the stations are new and cannot distribute the seeds as well as the members of Congress. We understand that Mr. Hatch will support such a change in the next Congress. The AMERICAN AGRICULTURIST hopes this reform will be accomplished, but there is much truth in the objections to it this year which were raised by Mr. Hatch.

Selling the Best or the Poorest.—F. F. Meriam, an old friend and subscriber, writes from his home in Portage Co., O., that he discussed the question whether farmers should sell the best or the poorest with some of his neighbors, and arrived at the following conclusion:

> If a gift you wish to make,
> Of your store select the best;
> Next choose what yourself will take,
> Then to market with the rest.

This will do for a rhyme, but we cannot indorse the doctrine. While the farmer should not stint his family nor feed them on the poorest the farm produces, he should see to it that everything sold is of the best quality, so far as possible. If it is necessary to sell poor stuff, ship it on commission or get rid of it on the general market in such a way that no one in the trade will know where it came from. Put your trade mark only on fine goods. The most successful farmers in any community are always the best farmers,—that is, those who raise the best crops, or stock, and by marketing them in proper shape and in a proper way secure the best prices. Their example should be imitated.

OUR $1. A WEEK *Club System* while as convenient to the buyer as any instalment system, is *a wholesale spot cash system* to us. The co-operation of the club members sells us 28 watches in each $38 Watch Club, and we get cash from the Club for each watch before it goes out, though each member only pays $1 a week. This is why we give you more for your money than any one else and why we are doing the largest watch business in the world. We sell **only first quality goods**, but our prices are about what others get for second quality. Our **$10 Silver Watch** is a substantial Silver (*not imitation of any kind*) Stem-Wind American Lever Watch—either hunting case or open. Our **$25.00 Watch** is a Stem-wind, Open Face, first quality, stiffened Gold American Lever Watch, *guaranteed to wear 20 years*. It is fully equal to any watch sold for $38 by others. We find a first-class Stiffened Gold Case much more satisfactory and serviceable than any Solid Gold Case that can be sold at less than double the money, as cheap solid cases are invariably thin, weak, of low quality, and worthless after short use. Our **$38 Watch** contains numerous important patented **improvements**, of vital importance to accurate timing—*Patent Dustproof, Patent Stem Wind, &c.*, which we control exclusively. It is fully equal for accuracy, appearance, durability and service, to any $75 Watch, either Open Face or Hunting. Our **$43.00 Railroad Watch** is especially constructed for the most exacting use, and is the **best** Railroad Watch made, Open Face or Hunting. All these prices are either all cash or in clubs, **$1.00 a week.** *An Ajax Watch Insulator given free with each Watch.*

The Keystone Watch Club Co
Main Office in Co's Own Building
904 WALNUT ST. PHILADA. PA.
Agents Wanted.
Ajax Watch Insulator, $1.00
A perfect protection against magnetism. *Fits any Watch.* Sent by mail on receipt of price. ☞ *We refer to any Commercial Agency.*

New and Profitable Tools:

New Principle in Hand Cultivators.

USEFUL FOR FARM AND GARDEN.

READ THIS.

Consider It the Best.
ROCHESTER, NEW YORK.
We consider the McGee our best Hand-Cultivator.
HIRAM SIBLEY & CO.

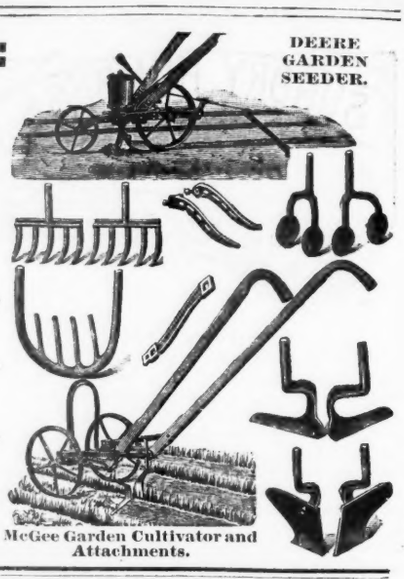
Give the Best of Satisfaction.
SALT LAKE, UTAH.
Your McGee Cultivator and Garden Seeder give the best of satisfaction.
J. F. GRANT.

Will Do the Work of Six or Eight Men.
BELLEVILLE, ILL.
Have used the McGee principally in Strawberry culture. It will do the work of six or eight men with ease.
L. C. BORNEMAN.

Superior to Anything He Ever Used.
SCOHARIE, N. Y.
I find the McGee Cultivator and Deere Garden Drill superior to anything we have used.
CHAS. HINMAN, Gardener.

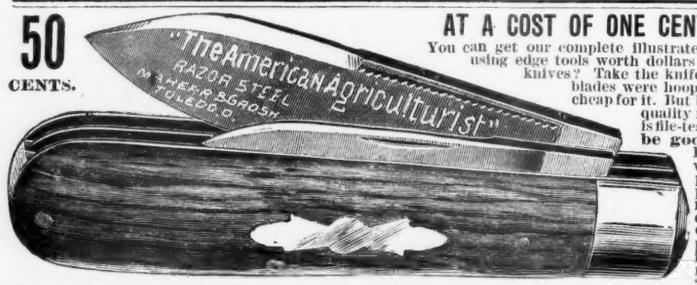
Send for descriptive circulars to

DEERE & MANSUR CO.,
MANUFACTURERS,
MOLINE, ILL.



McGee Garden Cultivator and Attachments.

50 CENTS.



AT A COST OF ONE CENT THIS MONTH

You can get our complete illustrated list with hints about using edge tools worth dollars to you. What about knives? Take the knife shown here now. If blades were hoop iron, 50 cents would be cheap for it. But blades are of the highest quality razor steel. Every blade is file-tested and **KNOWN to be good** before sending out. It is cheap for a silver dollar, but our price is **50c**, post-paid; 5 for $2. A dead man ought to be tempted. Boy's 2-blade, 25c; Girls', 25c; Ladies' pearl, 50c; **Butcher** 6 in., 50c; 8 in. shears, 75c; razor steel paring knife, 25c, all post-paid.

PRUNING TOOLS. Knife, extra strong, 85c, lighter, 50 to 75c; Shears, 75c post-paid; All steel Shear, home made, $1. Grafting knife, 25c; Budding, 35 to 55c. Combined 3 blade, Pruning, Jack, and Budding Knife, $1. Send for 64 page List, also "How to use a Razor." **MAHER & GROSH,** 4 S. St., Toledo, Ohio.

Irrigation

IS THE ACT OF
FLOWING WATER
over lands, to
NOURISH CROPS.
Fine Farming Lands
near
Evans and Greeley, Colo.
Under good
Irrigation Ditches,
And only 40 miles from the great and growing
CITY OF DENVER,
(POPULATION 100,000.)
are for sale on long credit including
RIGHTS TO WATER
At $20 to $25 per acre,
BY
The Platte Land Co.
S. J. GILMORE,
MANAGER,
1756 Larimer St.,
Denver, Colo.

ONE HUNDRED AND FIFTY THOUSAND FARMERS know from practical observation how efficiently the "ACME" Pulverizing Harrow, Clod Crusher and Leveler does the work and how its use increases the crop by thoroughly pulverizing the soil. Sent on trial. See advertisement on page 158.

MARK YOUR TOOLS WITH A STEEL STAMP, OR BURNING BRAND. PRICE LIST FREE. J.B. RONEY LYNN, MASS.

WE CHALLENGE the world to produce a line of implements **THEIR EQUAL** for efficiency, durability, finish, *and for so little money.*

Send for 1889 Illustrated Catalogue.

IRON AGE

HARROWS,
HORSE HOES,
AND CULTIVATORS.

CEM and JEWEL WHEEL HOES,
NEW MODEL SEED DRILLS, &c.

E. S. & F. BATEMAN, Spring Mills, N. J.

THOMAS SMOOTHING HARROW

IMPROVED REVERSIBLE HARROW
SPRING TOOTH HARROWS.
BEST IMPLEMENTS ON EARTH
HERENDEEN CO. GENEVA, N.Y.

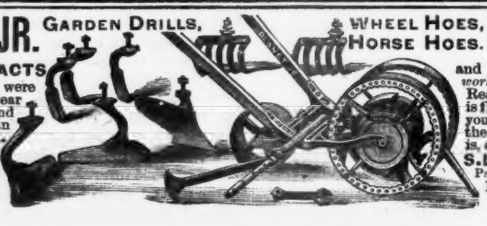
SEDGWICK WOVEN STEEL WIRE FENCE AND GATES.

Best Fences and Gates for all purposes. Free Catalogues, giving full particulars and prices. Ask Hardware Dealers, or address, mentioning this paper.

SEDGWICK BROS., RICHMOND, IND.

PLANET JR. GARDEN DRILLS, WHEEL HOES, HORSE HOES. FIREFLY

Set down for FACTS That these Tools were more popular last year than ever before, and and are this year than last. Another **Fact.** Not one in ten, who ought to own them knows it. Such as do not own them, ask those who do;



and examine them *at work*, they bear it well. Read our catalogue; it is **free** and *reliable.* If you have no use for these Tools, our advice is, do not buy them.

S. L. ALLEN & CO
Patentees & Manufrs.
129 Catharine St.
PHILADELPHIA.

New Publications.

HARRIS ON THE PIG. By Joseph Harris, New York, Orange Judd Co.; price, post-paid, $1.50.

When this book was first published (in 1870) the author was accused of writing it to "boom" Berkshire pigs. It certainly had that effect. President Welch once said that "'Harris on the Pig' did more to create a demand for improved breeds of pigs, especially the Berkshires, than all other agencies combined." A prominent Poland-China breeder once wrote to the AMERICAN AGRICULTURIST that "Mr. Harris was a breeder of Berkshires and, consequently, could see no merits in the Poland-Chinas." The fact is that Mr. Harris has never been a breeder of Berkshire pigs and has never offered them for sale. If his book praises them it was owing to his convictions and not to his financial interests. If he says less in favor of the Poland-Chinas than of the Berkshires, it should be remembered that when the book was first written the Poland-Chinas were almost unknown. Nevertheless it contained a very full account of them written by one of the most enthusiastic advocates of the breed the Hon. John M. Millikin, of Ohio. The breeders of Duroc-Jerseys and Victorias might with equal justice accuse Mr. Harris of neglecting their favorite breeds, while the simple truth is that at the time the book was written these breeds were unknown. We make these remarks because we happen to know that Mr. Harris is jealous of his honor in the matter. He is the last man that would use his position as an author to advocate any breed from interested motives. The book has been extensively read and has done much good. We have now a new edition with additional chapters of great interest and of special importance at this time. There are several excellent works on swine. "Harris on the Pig" was the first American book on the subject. In justice to the able authors who have followed in the same field this fact should not be forgotten. Very properly they have occupied new ground and have not discussed matters previously treated by Mr. Harris. The fact is that "Harris on the Pig" and "Coburn's Swine Husbandry" should both be read. In many respects they are quite different. It is not that one is written by a Western man and one by an Eastern man; it is the difference in the men. They look at things from different standpoints. In the new editions of these two works this difference is clearly shown. Mr. Coburn quotes approvingly the experiments and deductions of Profs. Sanborn, Henry, Shelton and others in regard to "Cooking Food," "Feeding for Lean and Feeding for Fat," "Shorts vs. Corn," etc.; Mr. Harris gives these same experiments, and points out their weak spots and evidently regards them as defective.

LAMENESS OF HORSES AND DISEASES OF THE LOCOMOTORY APPARATUS. By A. Liautard, M. D., V. M. Sold by the Orange Judd Co., New York; price, post-paid, $2.50.

The literature of the horse is voluminous. More than eleven hundred books relating in some way to equine matters have been published in England, to say nothing of similar works in the continental languages. The earlier works embody an immense mass of empiricism, quackery and traditional error, which it is the labor of more recent and intelligent authors to correct. No veterinary writer or teacher has done more than Dr. Liautard to place veterinary science upon a rational and scientific basis. The present work from his pen will be gladly welcomed by all who are interested in the ownership, care or management of horses. Its subject, authorship and style alike commend it. However renowned in pedigree and perfect a horse may be in other particulars, a single defective tendon in one of the legs may render him worthless. The anatomy and pathology of the locomotory apparatus are treated by Dr. Liautard in a style so lucid as to be easily understood by every horse keeper, and yet so profoundly scientific that the educated veterinarian will find it instructive.

THE OLIVE; Its Culture in Theory and Practice. By Arthur Tappan Marvin, of San Francisco. Sold by the Orange Judd Co., New York; price, post-paid, $2.

The olive, one of the oldest cultivated fruits of the world, was introduced into California by the mission fathers in the old Spanish colonial days, and olive culture has become an important industry in that prolific State. In the old world, especially in that part of it bordering on the Mediterranean, this interest still holds the important place it has held ever since the first dawn of history. In sacred and profane literature alike, the olive branch has been from the earliest times recognized as the emblem of peace, as the fruit is the emblem of abundance. Yet, important as is the olive industry, less progress has been made, until very recently, in its improvement and culture than in that of most other fruits. Within the present decade several works devoted to the olive and its products have been published in Italy and Spain, and a small treatise by Elwood Parker has appeared in California, but the present work by Marvin is the most comprehensive, scholarly and practical which has yet been issued. It embraces full descriptions of all the varieties worthy of cultivation, the soil, climate and methods required for olive culture, the expression and care of the oil, insect, fungus, and other parasitic enemies of the plant and fruit, together with treatment for protection against them. It is illustrated with sixteen full-page, handsomely engraved plates, and printed in a style which is truly luxurious.

WHEAT CULTURE. How to Double the Yield and Increase the Profits. By D. S. Curtiss. Illustrated. New York, Orange Judd Co.; paper 50 cents.

This little manual has been so well received by the public that a third and enlarged edition has recently been issued. It embraces in brief and succinct form the entire subject of winter wheat culture, from breaking the soil to thrashing the crop. It points the way out of the old ruts into which some wheat growers have fallen, and shows the better way, whereby the yield per acre may be doubled. The preparation of the soil, seeding, amount of seed per acre, best varieties, cultivation, harvesting, cleaning, etc., are all treated in detail, yet in a manner so clear and condensed that the small manual contains the substance of a volume.

CONSUMPTION,

IN its first stages, can be successfully checked by the prompt use of **Ayer's Cherry Pectoral**. Even in the later periods of that disease, the cough is wonderfully relieved by this medicine.

"I have used Ayer's Cherry Pectoral with the best effect in my practice. This wonderful preparation once saved my life. I had a constant cough, night sweats, was greatly reduced in flesh, and given up by my physician. One bottle and a half of the Pectoral cured me."—A. J. Eidson, M. D., Middleton, Tennessee.

"Several years ago I was severely ill. The doctors said I was in consumption, and that they could do nothing for me, but advised me, as a last resort, to try Ayer's Cherry Pectoral. After taking this medicine two or three months I was cured, and my health remains good to the present day."—James Birchard, Darien, Conn.

"Several years ago, on a passage home from California, by water, I contracted so severe a cold that for some days I was confined to my state-room, and a physician on board considered my life in danger. Happening to have a bottle of Ayer's Cherry Pectoral, I used it freely, and my lungs were soon restored to a healthy condition. Since then I have invariably recommended this preparation."—J. B. Chandler, Junction, Va.

Ayer's Cherry Pectoral,

PREPARED BY

Dr. J. C. Ayer & Co., Lowell, Mass.

Sold by all Druggists. Price $1; six bottles, $5.

ON 30 DAYS' TRIAL.

THIS NEW **ELASTIC TRUSS** Has a Pad different from all others, is cup shape, with Self-adjusting Ball in center, adapts itself to all positions of the body, while the ball in the cup presses back the intestines just as a person does with the finger. With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free. ECGLESTON TRUSS CO., Chicago, Ill.

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We offer them good pay for every subscriber secured, and an extra **Prize of $500** to the person who shall send us the largest number; **$400** for the second largest list, and so on. Sample copies and posters will be furnished, so that a great demand can be created in any neighborhood.

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The Buck-Thorn is the coming fence. It has given universal satisfaction in this neighborhood, and when a man uses it once he always want it again. It is plainly seen by stock, and will stand the severest winter we have without breaking. We regard it as the best fencing in the market. J. E. DODSWORTH & BRO., Cold Springs, Ky

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CAPITAL, - $250,000.

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State Aid to Agriculture.

(*Continued from Page* 144.)

and the printing of the reports of horticulture, agriculture and breeders' societies paid by the State amounts to about $500. The State Horticultural Society receives $2,000 regularly. This is the entire extent of the regular aid given by the State by statute to Iowa's agriculture. The expenses of the State Agricultural Society, including its officers and premiums, often amount to $25,000 or $30,000, that are provided for by the society itself. Its fairs are usually held for two or three years at a time in different parts of the State, the locality furnishing grounds and buildings and reimbursing itself by the increased business. The fair has reached such proportions, however, that a permanent home at Des Moines was desired, and an appropriation of $50,000 was asked, the citizens of that enterprising town agreeing to raise another $50,000 for buildings. But the State owns the land, and last year appropriated $9,500 for improvements upon it, but not for the society. All that the State does for the excellent Agricultural College at Ames is to provide lands and buildings, the cost of which for the present biennial period is $3,500 a year. Not a dollar is given for farmers' institutes or for the experiment stations. The institute work has been carried on by voluntary organization, and last winter thirty or more meetings were held in different parts of the State, giving great satisfaction. The farmers feel that at least one institute should be held annually in each of Iowa's ninety-nine counties. It is not unfair for farmers to demand this when $52,000 is appropriated for the better support of the State University for the education of lawyers and doctors. The special appropriations at the last session of the Legislature amounted to over $650,000, exclusive of salaries. But although agriculture pays from three-fourths to nine-tenths of all the State and county taxes, it gets less than three per cent of this sum.

Minnesota put $50,000 into its State fair buildings in 1887, $14,000 for county fairs, and $4,000 for premiums at the State fair.

For the year ended March 1, 1888, the agricultural appropriations in Missouri were $34,850. Of this sum the State Board of Agriculture had $5,650; the Agricultural College, mostly for building and improvements, $24,750; fish commission, $3,000; printing reports, $3,500; expenses of State veterinarian, $1,000; State Horticultural Society, $2,500, and $1,000 more for printing reports. There is no State Agricultural Society, but the County Courts are authorized to give $100 to each county society. It is felt that the State Board of Agriculture should have more liberal means, so as to interest itself in a State Fair, weather service, enlarge its crop reports, increase its institute work, and in other ways push forward the agricultural interests of a State which is an empire in extent and resources. Secretary Sanborn also advocates the desirability of placing an elementary text-book of agriculture in all the common schools.

In Kansas, the State Board of Agriculture, consisting of the President, Vice-President, Secretary, Treasurer, and twelve members, also includes a delegate from each district fair association that complies with the the board's regulations in the matter of reports. These delegates to its annual meeting are for the time-being *ex-officio* members entitled to all the rights and privileges of the board, and their expenses in attending such meeting are paid by the State. The Secretary has about $2,000 a year and employs two clerks at $1,200 a year each. The board has an office in the Capitol building, and much of its work is gathering crop statistics and reports, which assessors have to collect on blanks furnished by the board, upon the system adopted in Wisconsin and Illinois. The statistics of each county, including a map, are published separately in the board's reports, and the board also publishes monthly crop and weather bulletins from April to October and quarterly reports in December and March. The effectiveness of the board's work is much facilitated by the fact that every agricultural society which complies with the law in sending crop and other reports called for by the board is authorized to draw $200 annually from the treasury of the county in which such society exists, and this amount is not included in the $49,836 which were the total appropriations for agriculture for the year ended June 30, 1888. Of this amount the State Board of Agriculture receives $7,400; State Horticultural Society, $1,535; Agricultural College $17,328, mostly for improvements and repairs; State veterinarian, $3,000; fish commission, $1,500; printing reports, $19,073. The large biennial report of the State Board of Agriculture, forming a virtual encyclopedia of Kansas, is published at an expense of $40,000—20,000 copies being issued.

For the biennial term ending April 1, 1889, Nebraska appropriated $208,740 for agricultural purposes, the Board of Agriculture receiving $4,000, the Horticultural Society $2,000, the cattle commissions $80,240, the fish and game commissions $10,500, for printing the agricultural and horticultural reports $10,000, and $50,000 was appropriated for Nebraska hall at the State University and Agricultural College, this institution having an income of about $50,000 annually. The large appropriation for the cattle commission was made to facilitate the study of contagious diseases which has been carried on upon an extensive scale.

Dakota has been liberal with its Agricultural College, appropriating $43,000 for the same for the past two years, $6,000 for premiums at fairs, and $14,000 for the department of immigration exclusive of salaries.

In Colorado the Legislature of 1887 made no appropriations for the promotion of agriculture. The State Horticultural Society is doing a good work, but a bill granting it $2,000 was defeated, and two bills appropriating $17,000 for the Experiment Station for two years were vetoed by the Governor. The State fish commission gets $1,500 annually, and one-fifteenth of a mill, regular tax, is appropriated for cattle round-ups. The State Agricultural College has a regular income from the State tax of one-fifth of a mill, which nets it about $22,000 annually, out of which is paid about $1,500 to the Board of Agriculture, whose only duty is the control of the Agricultural College, the balance going to the college proper.

The California State Board of Agriculture, which controls the State Agricultural Society, receives an appropriation of $17,500 annually; twenty-one district agricultural associations get from $750 to $2,500 each, a total of $33,950; State Board of Horticulture, $15,000; fish commission, $7,500, of which not less than fifty per cent must be expended on hatcheries. The State does its own printing, and the cost of agricultural reports probably reaches at least $10,000. The Agricultural College is a department of the State University, which latter receives an annual *ad valorem* tax of one cent upon every $100 worth of taxable property in the State. Of the sum so collected, the University Board of Regents votes a certain amount to the Agricultural College. The Experiment Station is now supported wholly by the national act.

Oregon gives $5,000 annually to its Board of Agriculture, and an equal amount to the fish commission and to the State Agricultural College.

Washington Territory makes no appropriations for the advancement of agriculture.

Wyoming spends $4,000 a year on its agricultural societies, and $3,500 on its fish commission, out of total appropriations of $60,000 annually.

The Arizona Legislature in 1887 appropriated $5,000 annually for the commissioner of immigration, $5,000 to the Arizona Industrial Exposition, $2,500 for experiments in artesian wells, and for a sanitary live stock commission a special tax of one cent on each $100 of the assessed valuation of cattle, which will amount to about $5,000. The total for agricultural purposes is thus $22,500.

SOUTHERN STATES.

Kentucky imposes a tax of one cent on each $100 of taxable property for the Agricultural and Mechanical College at Lexington, in connection with which is an Experiment Station. The amount collected under this tax in 1885 was $18,420; 1886, $20,318; 1887, $19,750; or an average of $19,497 annually. A commissioner of agriculture, horticulture and statistics has an office at the capitol. He is paid a salary of $2,000. An equal sum is given for the work of his department, and $1,252 was expended last year for printing. A license fee of $15 is imposed upon each brand of fertilizer, which goes into the treasury of the Agricultural College and amounted to $1,600 for the fiscal year ended June 1, 1888, including $1 per hundred for the analysis tags furnished by the station. In case of an outbreak of pleuro-pneumonia, the State Board of Health is authorized to spend $6,000 in stamping it out.

North Carolina imposes a license fee of $500 for each fertilizer sold in the State, which amounted in 1887 to over $40,000. Beginning with the present year, $21,000 of this fund goes to the Board of Agriculture, and the rest to the Agricultural College. The State Agricultural Society receives $1,500 annually, but it and the State Horticultural Society usually get $500 each from the Board. Each local agricultural society that pays $50 in premiums is entitled to an equal amount from the State treasury. The work of a cattle commission is done by the Board, which also has charge of the fisheries, and has conducted an oyster survey at an expense of $4,000 a year. The Agricultural College, just started on an independent basis, has its site, four hundred acres of land, with several good buildings, one large one costing $13,000 and the Experiment Station and farm buildings can be used in connection with it. The college received $13,000 in 1887 and $15,000 in 1888 for buildings and improvements, and the Experiment Station gets the Hatch fund. The colored industrial and agricultural fairs receive $500 from the Board and $1,000 regularly from the State. The total appropriations for agriculture in 1886 were $45,200.

South Carolina taxes each ton of fertilizers sold in the State twenty-five cents, the proceeds of which, about $25,000 annually, are wholly devoted to the Board of Agriculture, which also does the work of a fish commission, although not much has been done lately in this line. The last Legislature appropriated $10,000 for the establishment of agricultural experiment stations, and the State Agricultural Society receives $1,000 annually. Thus, while the State appropriates over $800,000 for all purposes, not one per cent of this amount is regularly devoted to promoting agriculture, exclusive of the revenue from the fertilizer tax, which the farmers pay in addition to the State taxes.

The last Virginia Legislature created a Board of Agriculture and increased the regular appropriation from $7,000 to $10,000, placing the work of immigration and labor statistics in its charge. It also imposes a license of $20 on all fertilizer brands, which money is to be paid into the State treasury and will make the department self-sustaining.

In Georgia the tax of fifty cents per ton on commercial fertilizers brings $75,000 annually into the State treasury, but the State devotes only $20,200 for agricultural purposes, of which $10,000 is for the department of agriculture, $7,200 for fertilizer inspection, and $3,000 for the State chemist.

The Alabama Department of Agriculture, with a commissioner and two clerks, is maintained by a tax of fifty cents per ton on commercial fertilizers, amounting to about $25,000 annually. It should be noted that the whole of this fund, which is practically paid by the farmer, is used for the promotion of agriculture instead of a considerable part of it being paid back into the State treasury, as is the case in some States. The State Agricultural Society receives $3,000 annually.

The last Legislature in Florida made total appropriations of $405,900, but of this the only part for the promotion of agriculture was $7,500 for buildings at the Agricultural College. However, under the new constitution of the State, which went into effect fully on January 1, 1889, a commissioner of agriculture is established, but his duties are not yet prescribed. The Farmers' Alliance, the only effective agricultural organization in the State, proposes to see that this office is properly supported.

Mississippi has done little or nothing for her agriculture, although little else than an agricultural State, and has only five million out of thirty million acres under cultivation. There is a State Horticultural Society which receives no aid, but a State Board of Agriculture, a cattle commission or anything of that kind is unknown. The State has given about $330,000 to equip its Agricultural College at Starkville, in addition to the United States fund. The latter amounts to $227,000 and is divided between the white and negro colleges, giving each an income of $5,000.

Arkansas has given $13,000 annually for the next two years for its Industrial University and Agricultural College at Fayetteville.

Tennessee gives $7,000 annually for its commission of agriculture and mines.

Maryland has done little for agricultural purposes, the last Legislature appropriating only $6,000, the whole of which went to the Agricultural College.

Texas has established a commission of agriculture, insurance, statistics and history, the agricultural branch thereof receiving $3,950 annually.

West Virginia has done nothing in this direction, but a more liberal spirit is now manifest.

Delaware has a State Board of Agriculture in charge of its Agricultural Society, which receives $500 for farmers' institutes.

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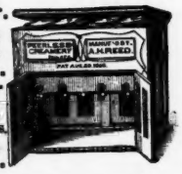

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Seeks to make all that is now known of the principles of plant nutrition **of practical use,** and is founded on the knowledge of the deficiencies and tardy action in average soils, and the composition and wants of plants as shown by exhaustive analyses. Accepting the soil with all its functions and offices as the seed and root bed of plants, it turns to the living, growing crop, and aims to supply it with the food it seeks in such **form, kind, proportion and quantity** as is specially required throughout the season, and which the soil and air do not supply.

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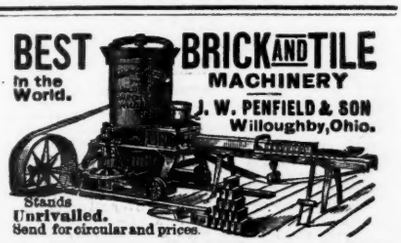

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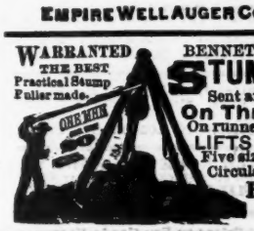

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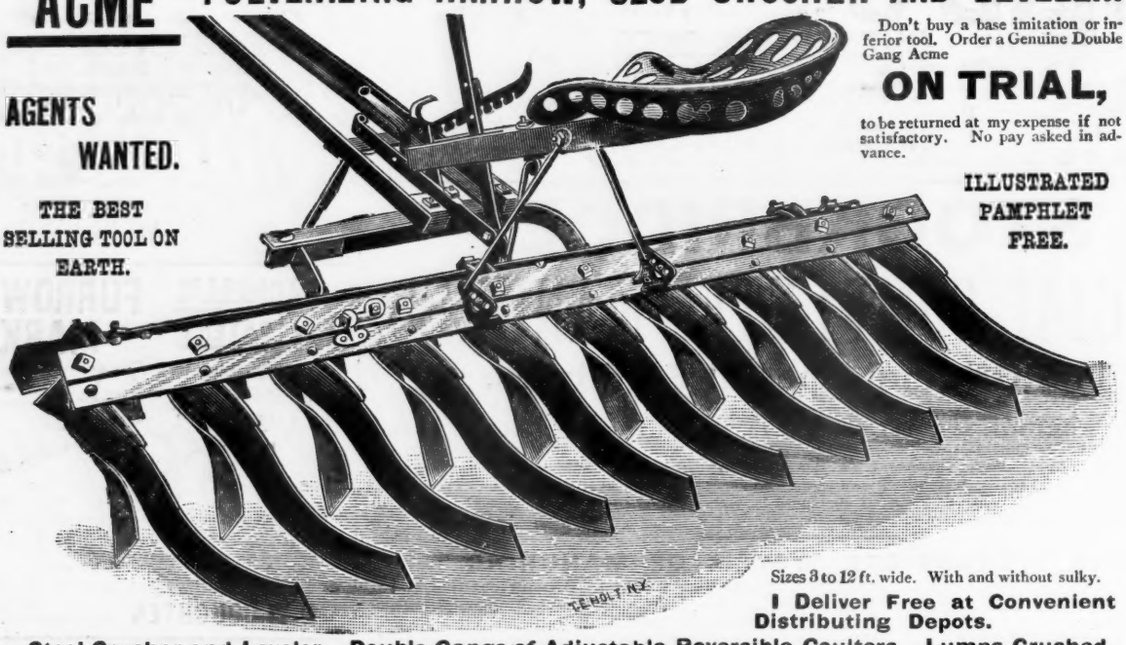

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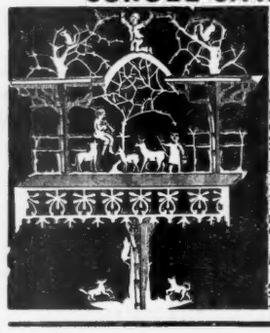

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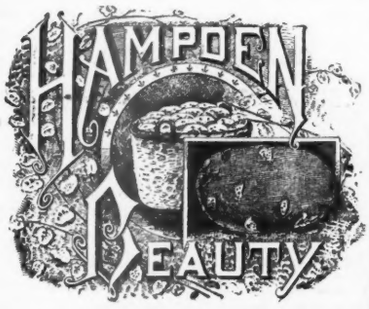

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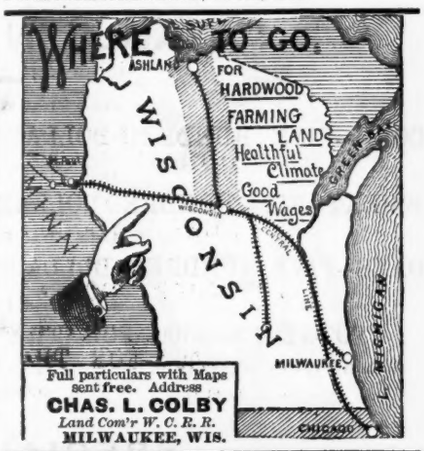

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THE PRIZE LIST IN DETAIL.

—:o:—

CLASS I--CORN.

FIRST PRIZE—The AMERICAN AGRICULTURIST Grand Cash Prize for the largest yield of Shelled Corn per acre, in gold coin..... $ 500.00

Special Prizes.

SOUTH CAROLINA DEPARTMENT OF AGRICULTURE—If the AMERICAN AGRICULTURIST first cash prize of $500 for the best acre of corn is taken by a South Carolina farmer, the South Carolina Department of Agriculture (Col. A. P. Butler, commissioner, Columbia) will duplicate that amount, giving an equal sum in addition to it, making the total cash obtainable for the best acre of corn, if grown in South Carolina..... 1,000.00

SOUTH CAROLINA DEPARTMENT OF AGRICULTURE—Provided the above premium is not taken, the State Department of Agriculture will give for the largest yield of corn obtained in this competition by a South Carolina farmer..... 100.00

MISSOURI BOARD OF AGRICULTURE (J. W. Sanborn, Columbia, secretary) offers $400 in prizes for corn grown in that State, so that it will be possible for our first prize crop, if grown in Missouri, to secure in cash..... 600.00

GIDDINGS & READ, Rutland, Vt., if the prize acre is grown from their Giddings seed corn, offer in gold coin..... 100.00

SEEDS—The Joseph Harris Seed Co., Moreton Farm, Rochester, N. Y., seeds from their catalogue for 1889 or 1890 (catalogue free) amounting to..... 75.00

QUINNIPIAC PHOSPHATE—For the best acre of corn grown exclusively on this Phosphate, the Quinnipiac Co., of New London, Ct., offer two tons of Quinnipiac phosphate, retail price, per ton, $36..... 72.00

MAPES CORN MANURE OR GOLD COIN—For the first prize crop of corn, providing it be grown exclusively on the Mapes manure..... 43.00

STOCKBRIDGE CORN MANURE—For the best acre of corn grown exclusively on this fertilizer, the Bowker Fertilizer Co., of Boston and New York, offer one ton of Stockbridge Corn Manure, retail price..... 42.50

NURSERY STOCK—The Jewell Nursery Co., of Lake City, Minn., assortment of stock for a model fruit garden, consisting of 25 assorted apple trees, $3.75; 13 plum, $7.50; 12 gooseberry, $2.50; 12 currants, $2.50; 12 raspberry, $2.50; 24 grapevines, $10, making one prize of 33.75

BOOKS—20 of Houghton, Mifflin & Co.'s $1.50 books, by Lawson Valentine..... 30.00

GREEN'S SELECTED FRUITS—A collection by the C. A. Green Nursery Co., Rochester, N. Y..... 25.00

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CULTIVATOR—Clark's Fruit Growing cultivator, by Higganum Mfg. Corp., Higganum, Ct. 20.00

—o—

CLASS 2--WHEAT.

FIRST PRIZE—The AMERICAN AGRICULTURIST Grand Cash Prize for the largest yield of Wheat per acre, in gold coin..... 500.00

Special Prizes.

QUINNIPIAC PHOSPHATE—For the best acre of wheat grown exclusively on this Phosphate, the Quinnipiac Co., of New London, Ct., offer two tons of Quinnipiac phosphate..... 72.00

MONARCH INCUBATOR—One of the most successful and famous machines, by the manufacturer, James Rankin, South Easton, Mass... 65.00

MAPES COMPLETE MANURE OR GOLD COIN—For the first prize crop of wheat, provided it be grown exclusively on any of the Mapes manures..... 44.00

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BOWKER'S HILL AND DRILL PHOSPHATE—For the best acre of wheat grown exclusively on this phosphate, the Bowker Fertilizer Co., of Boston and New York, offer one ton of Bowker's Hill and Drill Phosphate, retail price..... 38.00

NURSERY STOCK—Model fruit garden, by The Jewell Nursery Co., Lake City, Minn., as above..... 33.75

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TORNADO SEEDER—By the Whitman Agricultural Co., St. Louis, Mo., one Tornado Seeder, listed at..... 25.00

LOUDEN HAY TOOLS—Hay carriers, slings, stackers, etc., by Louden Machinery Co., Fairfield, Iowa..... 25.00

HARROW—No. 2 Adjustable Iron Clad American Harrow, made by S. Hutchinson, Griggsville, Ill..... 15.00

—o—

CLASS 3--OATS.

FIRST PRIZE—The AMERICAN AGRICULTURIST Grand Cash Prize for the largest yield of Oats per acre, in gold coin..... 500.00

Special Prizes.

B. L. BRAGG & CO., Springfield, Mass., in case the first prize crop is grown from seed oats purchased of them will give $100 in gold coin, making the cash obtainable for the first prize crop..... 600.00

B. L. BRAGG & CO., Springfield, Mass., in case the above prize is not taken, offer for the largest yield of oats grown in this competition on seed purchased of them, $50 in gold coin; second, $30; third, $20; total..... 100.00

QUINNIPIAC PHOSPHATE—For the best acre of oats grown exclusively on this Phosphate, the Quinnipiac Co., of New London, Ct., offer two tons of Quinnipiac phosphate..... 72.00

MAPES COMPLETE MANURE FOR GENERAL USE OR GOLD COIN—For the first prize crop of oats, provided it be grown exclusively on any of the Mapes manures..... 44.00

DANIELS' PLOW SULKY—By the makers, E. B. Daniels & Co., Havana, N. Y., listed at.... 40.00

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HAY CARRIER—Porter adjustable and reversible hay carrier, $10; also two Little Giant hay slings, $10, by J. E. Porter, Ottawa, Ill.... 20.00

BOOKS—10 of Houghton, Mifflin & Co.'s $1.50 books, by Lawson Valentine..... 15.00

KNIFE GRINDER—Poulson's Perfect Mower and Reaper Knife Grinder, by Jos. W. Pratt, Westville, N. J..... 10.00

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CLASS 4--POTATOES.

FIRST PRIZE—The AMERICAN AGRICULTURIST Grand Cash Prize for the largest yield of Potatoes, per acre, in gold coin..... 500.00

Special Prizes.

MAPES POTATO MANURE OR GOLD COIN—If the AMERICAN AGRICULTURIST Grand Cash Prize of $500 in gold coin goes to Potatoes grown exclusively on Mapes Potato Manure, the Mapes Formula and Peruvian Guano Co., of 158 Front street, New York city, will duplicate that amount, giving an equal sum in addition to it, making the total cash obtainable for the Prize Crop under these circumstances, in gold coin..... 1,000.00

MAPES POTATO MANURE OR GOLD COIN—Provided the above premium is not taken, the Mapes Formula and Peruvian Guano Co., of 158 Front street, New York, will give $500 in gold coin for the second, third, fourth and fifth prize crops for the largest yield of Potatoes grown in this competition with the Mapes Potato Manure exclusively: Second prize, $200; third prize, $150; fourth prize, $100; fifth prize, $50. Total..... 500.00

STOCKBRIDGE POTATO MANURE OR GOLD COIN—If the AMERICAN AGRICULTURIST Grand Cash Prize of $500 in gold coin goes to Potatoes grown exclusively on the Stockbridge Potato Manure the Bowker Fertilizer Co., of Boston and New York, will give $600, making the cash obtainable for the prize crop under these circumstances, in gold coin... 1,100.00

STOCKBRIDGE POTATO MANURE OR GOLD COIN—Provided the above premium is not taken, the Bowker Fertilizer Co., of Boston and New York, will give $600 in gold coin for the second, third, fourth and fifth prize crops, for the largest yields of Potatoes grown in this competition with the Stockbridge Potato Manure exclusively: Second prize, $225; third prize, $175; fourth prize, $125; fifth prize, $75. Total..... 600.00

QUINNIPIAC FERTILIZERS OR GOLD COIN—If the AMERICAN AGRICULTURIST Grand Cash Prize of $500 in gold coin goes to Potatoes grown exclusively on the Quinnipiac Fertilizers, the Quinnipiac Company of New London, Ct., will give $500, making the cash obtainable for the prize crop under these circumstances, in gold coin..... 1,000.00

QUINNIPIAC FERTILIZERS OR GOLD COIN—Provided the above premium is not taken, the Quinnipiac Company of New London, Ct., will give $500 in gold coin for the second, third, fourth and fifth prize crops, for the largest yields of Potatoes grown in this competition, with any of the Quinnipiac fertilizers, exclusively: Second prize, $200; third prize, $150; fourth prize, $100; fifth prize, $50; total..... 500.00

ASPINWALL POTATO PLANTER—If the AMERICAN AGRICULTURIST Grand Cash Prize of $500 in gold goes to potatoes planted by the Aspinwall Potato Planter, the Aspinwall Mfg. Co., Three Rivers, Mich., will give in gold coin $210, and one Aspinwall Potato Planter with Fertilizer and Corn Planter attachments all complete, listed at $90; making a total of... 300.00

DIGGER—McCallum Potato Digging and Picking Machine, made by J. McCallum Mfg. Co., Elgin, Ill., all competitors for the AMERICAN AGRICULTURIST Prize to have the privilege of buying one of these machines at the lowest wholesale price; retail price..... 100.00

GIDDINGS & READ, Rutland, Vt., if the first prize goes to potatoes grown exclusively from their Northern grown seed, offer in gold coin..... 100.00

PRIDE OF THE MARKET—Isaac F. Tillinghast, La Plume, Pa., if at least one barrel of this variety be planted by the contestant, offers in gold..... 100.00

DANIELS' PLOW SULKY—By the makers, E. B. Daniels & Co., Havana, N. Y., listed at... 40.00

NURSERY STOCK—Model fruit garden by The Jewell Nursery Co., as above..... 33.75

WHEEL HOE—Weeder, Cultivator and Seed Drill, a complete set of tools for a market garden, by C. O. Jelliff & Co., Southport, Ct..... 15.00

HANDSOME INDORSEMENT.

United States Secretary of Agriculture.

WASHINGTON, D. C., December 6, 1888.

To the Editor of the American Agriculturist:

Long experience in agricultural affairs leads me to welcome every enterprise which may rightly incite the farmer to improve his methods of work. A crop competition such as you describe, with prizes large enough to induce a large number of the best farmers to put forth their efforts, and under a management of undoubted honesty, seems to me a long step in this useful direction. The fact that the AMERICAN AGRICULTURIST Prize Crop Competition is planned by an active promoter of the National Experiment Station enterprize and, like that undertaking, is in line with the popular sentiment in favor of diversified agricultural experimenting, also leads me to welcome it most heartily.

Yours very truly. NORMAN J. COLMAN.

Mississippi State Wheel.

I hope the secretaries of our subordinate lodges will see the value of the AMERICAN AGRICULTURIST and its Prize Crop Competition. I wish it every success.

F. M. BLUNT, Secretary State Wheel.

Missouri Board of Agriculture.

Your premium is a courageous one, and one of great promise of usefulness to the public if well guarded as to conditions; otherwise, its value will be much impaired. Our State Board of Agriculture has offered $400 for corn premiums under conditions that cannot fail to bring out facts of value. Had your offer come three weeks earlier, I could have given it a wide circulation, and will do so now, if opportunity offers, in the way of circulars sent out from this office, which opportunity may and probably will come. Your enterprise should commend the AMERICAN AGRICULTURIST to the farmers of the country, not only as a wide-awake gleaner of the current facts of the hour in agriculture, but as an earnest helpmeet to the farmer.

J. W. SANBORN, Secretary.

National Agricultural Wheel of America.

I wish the AMERICAN AGRICULTURIST great success in its undertaking, which certainly is a most commendable one. ISAAC MCCRACKEN, President.

Texas State Grange.

You have offered liberally—yes, more than liberal premiums—to a grand purpose. It is one that should enlist every farmer in America, and induce each and all to improve their mode of farming, if not for the premium. I will take pleasure in calling the attention of the farmers in Texas to the encouragement you offer to stimulate and improve farming. Wishing the AMERICAN AGRICULTURIST continued success in its efforts for the tillers of the soil. A. J. ROSE, Master.

North Carolina Cheer.

I wish the AMERICAN AGRICULTURIST every success in its undertaking and will cheerfully assist in the enterprise. To my mind, you have hit the nail on the head in this matter.

Dr. H. B. BATTLE, Director North Carolina Experiment Station.

Prof. Levi Stockbridge.

At first I thought I could make suggestions that would be an improvement in the Prize Crop Competition, but study and reflection satisfied me that you had the subject thoroughly in hand, and that there was as much of the bottom matter in your head which did not appear as there was in sight on paper. If the reports are fully and honestly answered, and the experiment stations do their part, you will have the subject in your hands in all its bearings and will get the milk out of the cocoanut. I am glad the AMERICAN AGRICULTURIST has undertaken this herculean and costly job, and hope it will be rewarded in money, honor and the consciousness of having advanced the farmer many a peg on the right road.

LEVI STOCKBRIDGE, Amherst, Mass.

The Georgia Department of Agriculture.

The AMERICAN AGRICULTURIST Prize Crop Competition promises very desirable results.

HON. J. T. HENDERSON, Commissioner.

Hearty Aid from Alabama.

The AMERICAN AGRICULTURIST Prize Crop Competition should result in collecting much valuable information from the reports. We will do our part in making it a success.

J. S. NEWMAN, Director State Agricultural Experiment Station, Auburn, Ala.

The West Virginia Station.

Our station will be glad to facilitate, as far as it can, the efforts of the AMERICAN AGRICULTURIST in advancing the agricultural interests and will encourage our farmers in all possible ways to avail themselves of the advantages you offer. We shall be glad to co-operate with you in any way in our power.

JOHN A. MYERS, Director West Virginia Experiment Station, Morgantown.

Texas Farmers' Alliance.

I appreciate very much the efforts of the AMERICAN AGRICULTURIST to encourage experimental farming. I am of the opinion that these efforts will redound to the advancement of farmers throughout our country. It will be a pleasure for me to aid this great effort to increase the productiveness of our soil and enhance the value of the farmers' products. EVAN JONES, President.

THE CONDITIONS

Of the American Agriculturist Prize Crop Competition.

1. No contestant can take more than one first prize, though he may contest for all four prizes.

2. Blanks for entries and Book of Instructions and Reports will be furnished on receipt of ten cents. These documents will be in book form for convenience of reference. The book will contain all the questions to be answered in making out the report of the crop, with blanks for the answers, so that it will be very little work to write the report—a point farmers will appreciate.

3. The land must be not less than one acre (43,560 square feet), carefully measured by a surveyor or other disinterested and competent person, whose affidavit thereof, made before a justice of the peace or notary public, will be required.

4. A complete record must be given of the crop, and a financial statement of its cost, the soil, fertilizers used, culture and other questions asked in the book of blanks furnished for the purpose.

5. The harvesting must be done in the presence of at least three disinterested witnesses, who must measure the product, and whose signatures must attest the honesty and correctness of the contestant's final report duly sworn to. These reports must be made out in the Book of Instructions and Reports for AMERICAN AGRICULTURIST Prize Crop Competition.

6. The AMERICAN AGRICULTURIST first prizes of $500 each in gold will go to the largest yield per acre of Corn, Wheat, Oats and Potatoes; the second prize to the next largest yield of each crop and so on. These yields must be duly reported and certified to as prescribed in the Book of Instructions and Reports for the AMERICAN AGRICULTURIST Prize Crop Competition.

7. Each contestant must be a subscriber to the AMERICAN AGRICULTURIST for the ensuing year. Those whose subscriptions are paid for only to October, 1889, or to earlier dates, may contest upon renewing their subscriptions. All subscribers whose land is in North America may compete, no matter whether they subscribe directly or through agents who are working for the liberal prizes offered in the AMERICAN AGRICULTURIST premium list for subscribers, or through other papers.

Contestants Will Not Be Limited.

To any one method of cultivation, to any one variety, to any one fertilizer, or to any system whatever. Every farmer competing for our extraordinary prizes will be at full liberty to adopt the culture, variety, fertilizer or method, which in his judgment is best adapted to his conditions for securing the largest and most profitable crops. This gives farmers everywhere an equal chance at the prizes and equal inducement to better their farming in their own locality.

How to Enter the Contest.

See that your subscription to the AMERICAN AGRICULTURIST is paid, as per Rule 7. Then send 10 cents to the office of the AMERICAN AGRICULTURIST at 751 Broadway, New York, for a copy of the Book of Instructions and Reports for Contestants. You are then ready to go ahead. Farmers will find it profitable to secure one of these books in which to keep an account with any crop, even if they don't compete for the wonderfully liberal prizes offered, as they all should do.

Correction.

The price of the Tornado Broadcast Sower, contributed as a special prize by the Whitman Agricultural Co., of St. Louis, Mo., was given as $100 in the AMERICAN AGRICULTURIST for February. This is incorrect. The list price of this remarkably effective seeder is only $25. Our readers can investigate the merits of any of the special prizes offered by applying to the parties who contribute them. They will be glad to give prompt attention to such inquiries.

SEA SHELLS for poultry, for health and egg producing cannot be beaten. Price $1.25 per bbl. Sample box 4 cts. **WM. A. BENTON,** Guilford, Ct.

CHOICE TEXAS LANDS.

Rare Chance for Settlers.

The Railroad System of Texas having developed so as to bring within easy access of good interior and seaboard markets the lands granted to the

HOUSTON & TEXAS CENTRAL RY. CO.

It has been determined to offer to settlers the

Renowned Agricult'l Lands

Located along the line of the Fort Worth & Denver City R. R. beginning with Wilbarger Country, comprising

200,000 ACRES

In farms of 160 acres and upward. These lands were located by the Company among the earliest, with especial care as to soil, timber, and water. They are adapted to the growth of cotton, corn, oats, wheat, barley, rye, vegetables, orchards and gardens and the various domestic grasses.

Situated in the elevated and healthy region known as the Southern Panhandle of Texas, they possess a **genial climate,** favorable to man and beast, where outdoor work can be carried on the year round, and are in marked contrast with regions of early and late frosts or of destructive "blizzards."

Population is fast pouring in, and local government is already established, with schools, churches, etc.

TERMS OF SALE: One-fifth cash, balance in four equal yearly payments, with interest on deferred payments.

For further information as to these and lands in adjacent counties, apply to

J. S. NAPIER, Vernon, Texas,

(who is prepared to show to purchasers); or to

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DUTTON GRINDER

Perfect Mowing MACHINE KNIFE GRINDER.

Weighs but 18 Lbs.

Can be carried into the field and attached to Mowing Machine Wheel. Send for Descriptive Catalogue. Agents wanted in every County.

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USE QUINNIPIAC FERTILIZERS AND WIN

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Every contestant for the American Agriculturist Potato prize should at once secure from **THE QUINNIPIAC COMPANY** the particulars of

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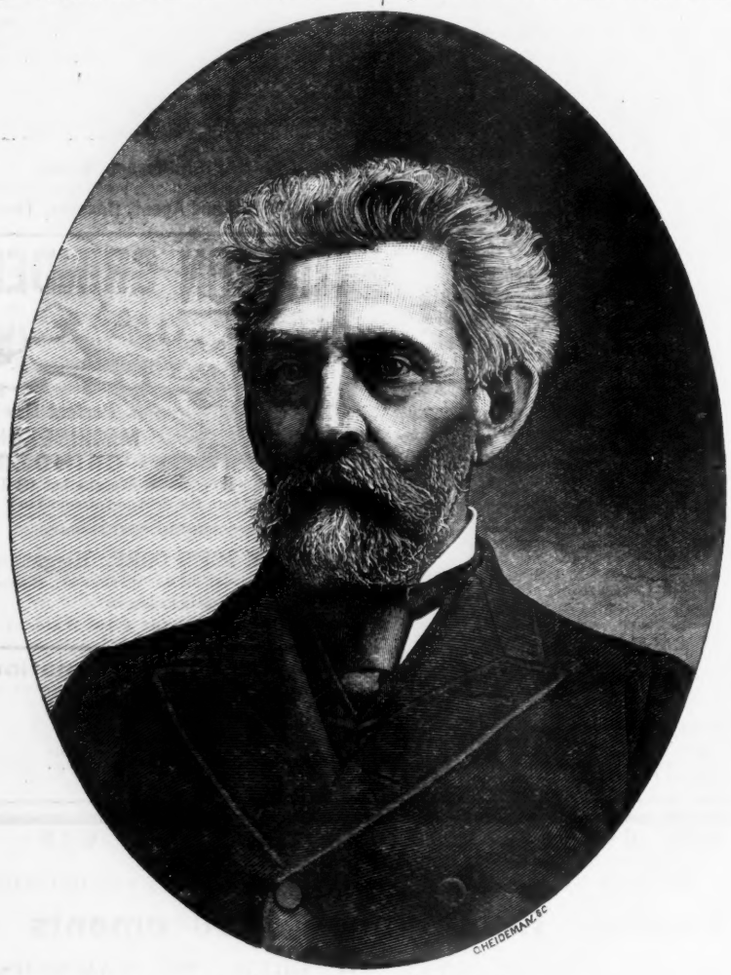
SYRACUSE CHILLED PLOW CO., Syracuse, N. Y.

The First Secretary of Agriculture.

Our engraving is an excellent likeness of Hon. Norman J. Colman, for the past four years commissioner of the United States Bureau of Agriculture. Under the new law creating an Executive Department in Agriculture, Mr. Colman was confirmed on February 13, as Secretary of Agriculture, and for the first time the agricultural interests of the United States were represented in the President's Cabinet. Mr. Colman's term of office will expire March 4, but there is a widespread desire that he be the Assistant Secretary of Agriculture under the new Administration. Mr. Colman has endeavored to manage the Department purely for the farmers' welfare, and the new Administration can ill afford to wholly part with his services. Colonel Colman is a Missouri farmer and agricultural editor, his *Colman's Rural World* being one of the best farm journals in the Mississippi valley. He has been a practical nurseryman, and is now an extensive breeder of fine horses. Colonel Colman



NORMAN J. COLMAN.

has also been prominent in the affairs of his own State, where his influence has ever been exerted on the side of progress. Aside from the direct practical work of the Department, Mr. Colman has done much to promote the real science of agriculture, and his efforts in behalf of the experiment stations have been fruitful and appreciated.

Cucumbers Protected by Grass.

"Hoe frequently until the plants cover the ground," is the advice as to cucumbers given by William N. White in his excellent book, "Gardening for the South;" but in Southern Florida (latitude 29°) where I live, experience shows that clean culture is out of the question. In the year of the big freeze, 1886, when Florida was so severely hurt, I had delayed planting cucumbers a little beyond the usual time; consequently, the vines were yet far from covering the ground when the hot sun caused them to shrivel up. Walking over the plat, I hardly collected enough cucumbers for a single mess for myself alone, and they were as poor of color as of size. I turned my back on the plat and gave it up, when, lo! my negro help emerged from the margin of the field where the grass grew undisturbed, with a dozen of the finest full grown, dark green cucumbers. The vines, which right at the hill seemed nearly dead, as soon as they reached the refreshing shady neighborhood of the grass revived, and running in it lustily made fruit. It is just the protection which the grass affords that the cucumber wants; no other will answer. When I planted a summer crop of not only cucumbers but also melons and egg-plants between rows of Millo maize, I did not obtain the same result. The egg-plants did not even grow at all, lingering for weeks without the least progress, until at last the "protection" was taken away, when they started into a quick successful growth. They did not fear the sun of South Florida! But such is the itch of clean culture that when this year the grass seemed to smother my cucumbers, I pulled it up. The result was disastrous again, and had it not been for some vines that run into the grass alongside, I would have got neither many nor full grown specimens of the delicious vegetable. DR. LINDORME, Orange Co., Fla.

A Snug Little Income is that of the New York Life Insurance Company, as reported in our advertising columns;—twenty-five million dollars, or over that, a few hundred thousand more or less do not signify much in such a case. About one-sixth of it was from interest on invested assets, leaving twenty-one millions contributed by policy holders. Men do not pay out such sums for nothing, and, as the report shows, about eleven millions were returned to policy holders in death claims, endowments, annuities, dividends and surrender values of policies purchased. Something more than ten millions were added to the Company's assets as security for new and old policy holders. It is a wonderful record of a wonderful Company, which is showing results of matured policies that are highly gratifying as investments alone, to say nothing of the security furnished while the policy is in force.

Telling Figures

—FROM THE—

Forty-fourth Annual Report

—OF THE—

New York Life Insurance COMPANY,

OFFICE: Nos. 346 and 348 Broadway, N. Y.

JANUARY 1, 1889.

TOTAL INCOME, over twenty-five million dollars.

BENEFITS TO POLICY-HOLDERS, nearly eleven million dollars.

INTEREST INCOME, over five per cent. on average net assets.

NEW INSURANCE WRITTEN, over one hundred and twenty-five million dollars.

ASSETS, over ninety-three million dollars.

SURPLUS, by New State Standard, thirteen and a half million dollars.

INSURANCE IN FORCE, nearly four hundred and twenty million dollars.

All these items show increases over the figures of 1887, from an increase of over half a million in Interest Receipts to an increase of sixty millions in Insurance in Force.

SUMMARY OF REPORT.

BUSINESS OF 1888.

Premiums	$21,127,590.75
Interest, Rents, etc.	4,273,692.08
Total Income	**$25,401,282.83**
Death-claims and Endowments	$5,425,926.78
Dividends, Annuities, and Purchased Insurances	5,547,143.27
Total to Policy-holders.	**$10,973,070.05**
New Policies Issued	33,334
New Insurance Written	$125,019,731.00

CONDITION JAN. 1, 1889.

Assets	**$93,480,186.55**
*Divisible Surplus, Co's New Standard	$7,082,250.25
†Tontine Surplus	6,423,777.13
Liabilities, New State Standard (4 per cent.)	**$79,974,159.17**
Surplus, by New State Standard (4 per cent.)	**$13,500,000.00**
Policies in Force	129,911
Insurance in Force	$419,886,505.00

PROGRESS IN 1888.

Increase in Interest	$507,758.68
Increase in Benefits to Policy-holders	1,437,859.26
Increase in Surplus for Dividends	1,653,206.94
Increase in Premiums	2,840,737.03
Increase in Total Income	3,348,495.71
Increase in Assets	10,400,340.70
Increase in Insurance Written	18,270,436.00
Increase in Insurance in Force	60,950,969.00

* Exclusive of the amount specially reserved as a contingent liability to Tontine Dividend Fund.

† Over and above a 4 per cent. reserve on existing policies of that class.

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WILLIAM H. APPLETON,	EDWARD MARTIN,
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Price only $15.00.

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SUBSCRIBERS taking any premium or other publication in connection with the American Agriculturist each count he same as those taking the Agriculturist at $1.00 each.

We take pleasure in offering herewith a watch that every subscriber of the AMERICAN AGRICULTURIST will appreciate. It is made specially for us by the Trenton Watch Co., of Trenton, N. J., and we can recommend it in every way. IN APPEARANCE, FINISH, DURABILITY and TIME-KEEPING QUALITIES this watch is NOT EXCELLED by ANY GOLD WATCH COSTING $100 and upward, and it will GIVE AS GOOD SATSFACTION.

THE MOVEMENT is FINELY FINISHED in every way and is WARRANTED to be an ACCURATE TIME-KEEPER. It has a JEWELED BALANCE, removable without taking off the top plate, is STEM WIND and STEM SET, also with SECOND HAND, and by reason of its many PATENTED IMPROVEMENTS is LESS LIABLE to GET OUT OF ORDER than most Swiss or American watches. It will require no more repairing than any watch costing five times as much money. All MOVEMENTS are CAREFULLY REGULATED and INSPECTED FOR THIRTY DAYS after being finished and before leaving the factory.

THE CASES. The most expensive watch case sold is made of solid gold, which cannot be afforded except by persons of abundant means. Next comes the filled gold case, the style we offer, which is made from gold bars rolled down over composition metal. In making the cases of this watch a bar of 14-KARAT GOLD (the best quality for durability) is placed on each side of a bar of composition and subjected to an immense pressure, by which it is made to work as a piece of solid gold. The portions of the CASE EXPOSED being SOLID GOLD will WEAR practically for ALL TIME without exposing the metal and to all intents and purposes are JUST AS GOOD AS SOLID GOLD.

GOLD PLATED CASES are merely composition with a gold wash on the outside which will soon wear off, exposing the composition. THE CAPS, CENTERS and BUZELS are also made from 14-KARAT GOLD in the same manner as the cases. THE PENDENT BOW, JOINTS, JOINT PLUGS and THUMB PIECES are SOLID GOLD. It contains MORE GOLD than ANY OTHER FILLED CASE IN THE MARKET and combines in its construction all the LATEST IMPROVEMENTS and PATENTS of any value in the art of watch-case making.

This watch is not an experiment, a novelty or a toy. It is MADE and FINISHED with all the CARE AND EXACTNESS usually given to a WATCH COSTING OVER A HUNDRED DOLLARS, while its BEAUTY OF FINISH and its TIME-KEEPING QUALITIES have been the wonder and amazement of jewelers and experts.

A $25 WATCH FOR $15. A watch the equal of this cannot be obtained anywhere for less than **$25** and in most places **$30 to $40** would be required. Our readers can obtain this watch at the extremely low price of **$15** POST-PAID; ent by REGISTERED MAIL and GUARANTEED TO KEEP good time and give perfect satisfaction, or it will be presented for a Club as announced bove. A year's subscription to the American Agriculturist given with each watch sold.

ROLLED GOLD CHAINS.

Chain No. 570 (curb).

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FOR $2.00 ADDITIONAL OR FOR 6 ADDITIONAL SUBSCRIBERS we will send with each watch one of the **chains shown herewith,** as may be selected. These chains are made for us by one of the largest chain manufacturers in New York, and are the **best rolled gold** (not plated) **fine quality** and **finish equal** in **appearance** to **solid gold** and will **wear a life-time. Price** of either chain when watch is not taken **$3.00 post-paid.** Mention Number of chain desired when you order.

Remit by postal note, post-office money or express order or by registered letter.

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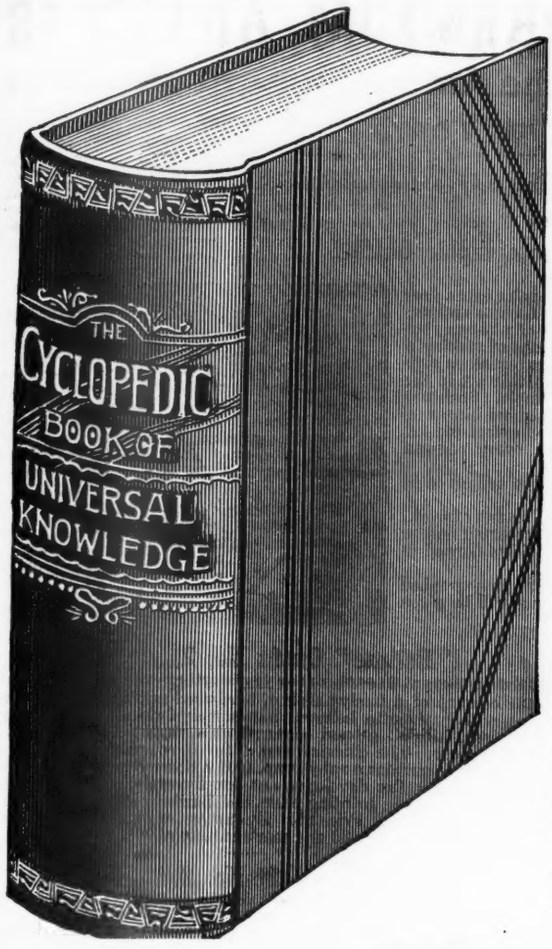

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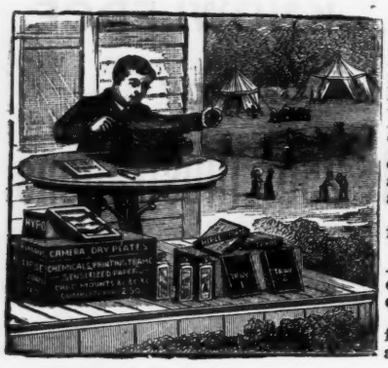

Amateur photography is becoming more popular every year and thousands of young men and women have become enthusiastic workers in the art. It is not only a source of pleasure, but many are using the experience gained as the means of making a handsome profit. It is not at all difficult to learn to make a picture, for so rapid has been the advance made in this art in the past few years that it is now comparatively simple. Such has been the demand for beginners' outfits that inventors have succeeded in producing outfits that will produce a perfect picture and at the same time be sold at a price that every one can afford.

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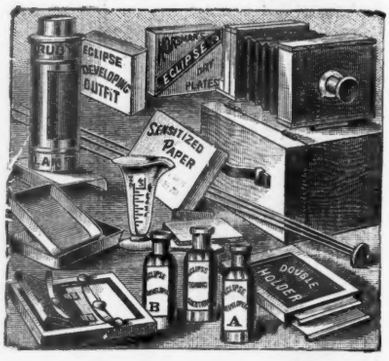

"Eclipse" Outfit No. 1.

Given for a Club of 8 Subscribers at $1 each, or for 4 Subscribers and $1 Additional.

This is the neatest and most complete outfit ever offered at so low a price, and is so simple that a child ten years old can make a picture. The outfit contains all that is needed to make and complete a photograph.

It consists of a beautiful little camera covered in imitation morocco, that will make a photograph 3½ inches by 4½ inches in size, and is provided with a rapid wide-angle lens.

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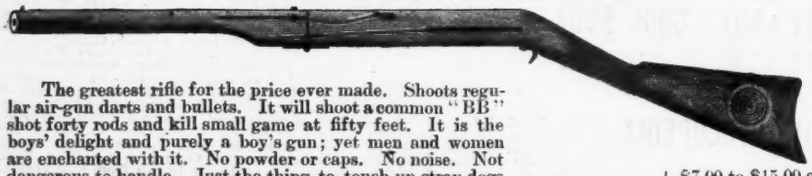
Given for a Club of Six Subscribers at $1 each, or for Three Subscribers and 75 cents Additional.



The greatest rifle for the price ever made. Shoots regular air-gun darts and bullets. It will shoot a common "BB" shot forty rods and kill small game at fifty feet. It is the boys' delight and purely a boy's gun; yet men and women are enchanted with it. No powder or caps. No noise. Not dangerous to handle. Just the thing to touch up stray dogs or cats, and for target practice it 's simply immense, creating more amusement than any toy known. By its use a person can become a perfect shot. It costs but one cent to shoot 100 times, and you can buy the gun for $1.50. It is 33 inches long. The barrel, air-chamber, and all working parts are made of brass and steel. The stock is maple, nicely stained and varnished, representing rosewood. The air-chamber and barrel are of mandrel-drawn brass, accurately bored and polished. The barrel has a perfect device for holding the ball tight to place. The plunger or piston is of brass, turned to fit the air-chamber perfectly. The spiral spring that drives the plunger is of the very best of steel, and made especially for this purpose. All parts are made to stand continual usage and not get out of order. The gun is nicely sighted, and well worth twice the retail price. This is not a spring-gun. The ball is thrown by compressed air. With each rifle is furnished one target, one dart, 100 bullets, directions, etc. The darts are the same as are used in air-guns costing from $7.00 to $15.00 each. If properly handled this gun will shoot 100,000 times without repairs. It is the greatest invention ever known in this line, and the greatest attraction out. Everybody is attracted by it, and everybody that likes fun should have one. One boy killed 28 English sparrows in an hour. For rats, mice, cherry-birds, toads, snakes, etc., it is just the thing.

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Outline designs for tidies.

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Daisies, bachelor buttons, rose buds, etc., 2½ inches wide.

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Forget-me-nots, 2x8.
Holly, 3½x6. Bird, 3½x4½.
Tulip, 1½x2½.
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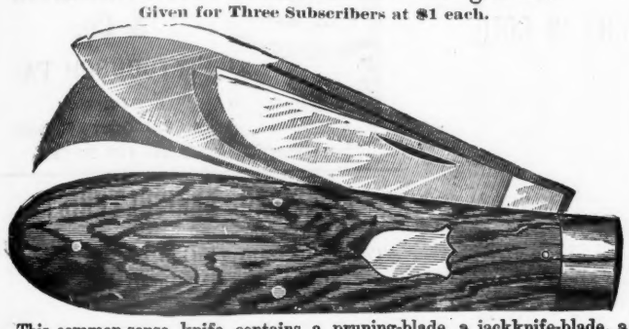
Peaches, 3x3. Beetle, 1½x2. Owls, 1½x3.
Anchor, 1½x2½. Kittens, 1½x3.
Mouse, 1½x2½. Frog, 1½x3.
Grasshopper, 1x3. Butterfly, 1½x1½.
Rooster, 1½x1½. Golden rod, 1x3½.
Rose, 1x2. Forget-me-nots, 1x2.
Cherries, 3x3. Wild Rose, 2x2½.
Sunflower, 1x1½. Fuchsias, 3x3.
Daisies and ferns, 2½x5½.
Star flower, 2½x3½.
Daisy, 1½x2. Dog, 1½x3.
Braiding pattern, 2½ inches wide, and other designs for crazy patchwork, etc.

The outfit also contains one box stamping powder, pad for stamping. Two books fancy work. Also full directions for stamping, etc. With this outfit you can make money by doing stamping for others. You can also adorn your home with many beautiful articles of embroidery, or you can find a rapid sale for all the fancy-work articles you make. This outfit has heretofore sold for $1, but we can offer it for only 50 cents, post-paid.

No. 177. "Common-Sense" Pruning-Knife.

Given for Three Subscribers at $1 each.



This common-sense knife contains a pruning-blade, a jackknife-blade, a budding and spaying blade. The cut gives the exact size. Every farmer, gardener, and stockman in the country should have one of these knives. The blades are carefully forged from razor-steel, file-tested, and will be replaced without extra charge if soft or flawy. Price, post-paid, $1. For $1.75 we will send this knife and a year's subscription to the AMERICAN AGRICULTURIST.

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Given for 2 Subscribers at $1 each.

This is a handkerchief made of pure, rich silk (*not cotton*), richly brocaded in the prevailing styles and colors. It is large size for gentlemen's use, and comes in assorted colors. This handkerchief is usually sold for $1, but through a fortunate purchase made in the dull season we are enabled to offer them for only 60 cents, post-paid.

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Given for 3 Subscribers at $1 each.

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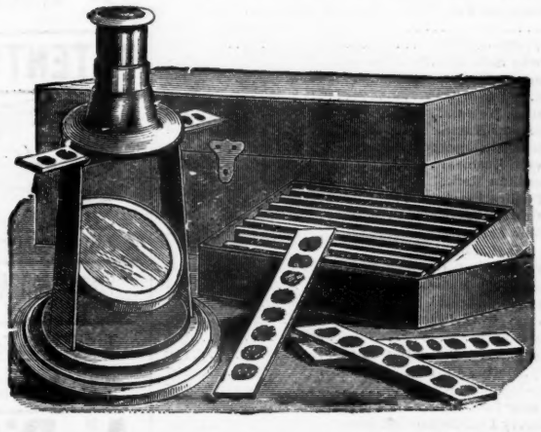

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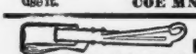

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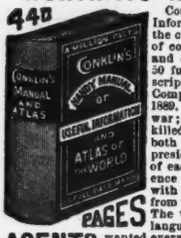

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